S1 E1 Susan Alberts

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SUMMARY KEYWORDS
animal behavior, animals, jeanne, baboons, primates, baboon, study, question, organism, community, social, women, field, people, behavior, maasai, project, student, biology, relationship

SPEAKERS
Susan Alberts, Matthew Zipple, Erin Siracusa

Susan Alberts 00:00

Why do I study animal behavior? Oh gosh, there's so many levels at which I could answer that question.

Matthew Zipple 00:21

Hello, and welcome to the Animal Behavior Podcast. I'm Matthew Zipple. In this episode I speak with Dr. Susan Alberts who directs the Amboseli Baboon Research Project, a long term longitudinal study of wild baboons. This project is well known for making foundational discoveries about social behavioral ecology and primates that are now textbook examples. In this episode, we talked about what animal behavior is, the history of the Amboseli Project, and how the sorts of questions that Susan and her colleagues ask have evolved as she's watched these animals and the study system develop and change over more than 30 years. Then after the break, we talk about the project's relationship with the community in which they work and the role that highly visible and successful women have had and continue to have in making primatology more welcoming to women than many other fields. I hope you enjoy let us know what you think at animalbehaviorpod@gmail.com. My guest today is Dr. Susan Alberts the Robert F. Durden Distinguished Professor of Biology at Duke University. She directs the Amboseli Baboon Research Project, which we'll talk about today. In 2019, she was elected to the National Academy of Sciences, and she's the second President Elect of the Animal Behavior Society. She has done a wide range of interdisciplinary work, including in the fields of anthropology, demography, endocrinology, genetics, and primatology. But her Twitter biography is just two words long behavioral biologist. So Susan, welcome, and thanks for being here.

Susan Alberts 01:51

Thanks for having me.

Matthew Zipple 01:52

Based on that description that you've given yourself on Twitter, it sounds like you've identified studying behavior as the thread that connects all of your work. So before we go any further, what is behavior?

Susan Alberts 02:02

I actually have a definition for behavior, which is behavior is the set of responses an organism makes to its environment. You can also think about it as the decisions an animal makes about how to respond if you accept and keep in mind that the word decisions is being used in a specific way here, which is that it requires no cognitive or conscious processes.

Matthew Zipple 02:26

So in your definition, just now you use two different words to describe who behaves. First you refer to organisms, and then later to animals. To be clear, the definition that you gave could just as readily apply to phenomena that we observe in plants or fungi or protists or bacteria. Is that right?

Susan Alberts 02:42

Absolutely. All of those organisms behave in the sense that they respond to their environment. I think animal behavior has, holds a special place in the way we think about behavior, because the presence of a central nervous system enables you to respond with a level of sophistication, and rapidity, that most organisms don't have the opportunity to do.

Matthew Zipple 03:05

So you say that animal behavior holds a special place, and this is the Animal Behavior Podcast. So why specifically, do you study animal behavior?

Susan Alberts 03:15

Why do I study animal behavior? Oh, gosh, there's so many levels at which I can answer that question. So one of the answers is that I can't really explain it. But I am and always have been deeply curious about simply watching animals as they behaved and seeing what they do and trying to understand it. And that's a sort of baseline curiosity that I can't explain or particularly find a justification or rationale for. And that predates my actually getting any training or education in it. In fact, it probably predates me being really that aware of, of that interest, or that I was doing it. As I became more aware of the interest and I got an education in biology, I think I developed a more coherent, justified answer, which is I'm really interested in how animals use behavior to solve problems. I once heard Emília Martins, who's a Professor of Biology at Indiana described behavior as like a flexible sheath around the organism that allows it to almost metaphorically change its shape and, outlines in real time as the environment changes. And I love that description because I do feel that that's what behavior does, and it's what I'm really interested in understanding. And then I also think that I'm particularly interested in how animals

use social behavior to solve problems and how conspecifics become both resources and competitors, allies and foes in the sort of daily, daily attempt to survive and get enough food and so on.

Matthew Zipple 05:10

Let's talk now about the Amboseli Baboon Research Project. This is a long term longitudinal study of wild baboons living in and around Amboseli National Park in Kenya. Long term data collection was started nearly 50 years ago in 1971. Can you run us through a bit of the history of the project?

Susan Alberts 05:28

Yeah, so the project was founded by Jeanne Altmann, my PhD advisor and her husband, Stuart Altmann, and they went to Amboseli in the early 1960s. Actually, they did a fairly big trek around a big chunk of East Africa looking for the best place to study baboons. They were interested in baboons as terrestrial, easily observable primates who were very behaviorally flexible. And they wanted to understand how baboons navigated their environment, and how they managed the ecology in which they live. And they were particularly interested in baboons, as I say, because of the trust reality, making them relatively easily visible. And because baboons were a primate meaning that they had really highly flexible social behavior. They spent quite a bit of time doing the big drive the recognizance trip, and then they settled on Amboseli is the place with the the most easily observable population. And they spent about a year there. And they learned a lot about baboon ecology and published a book that came out in 1970, which is a classic in its genre called Baboon Ecology. And, and then they left in '64, they went back to North America. And after five years, they came back to Amboseli and encountered a dramatically different landscape than they had left. And in retrospect, they realized that the landscape they had been working in in '63, '62 to '64 was a landscape in in flux, it was a dynamically changing landscape. And among the changes that they found in '69, was a dramatic reduction in the baboon population. And this was confusing, intriguing, puzzling. They came back in '70. And then in '71, they came back and established what became the long term longitudinal, continuous Amboseli, the baboon research project. But they really had almost a decade before that of experience observing the baboons and the habitat in Amboseli. And yeah, that was the, that was the founding of the project. And Jeanne then did not have a PhD at the time she had a bachelor's degree in mathematics and a master's degree in mathematics teaching, and became a math teacher in the 60s in Atlanta and Stuart was at Emory University as a, as a faculty member. But after they went back in the 70s, Jeanne decided that she was really interested in the behavioral biology of the animal and did her PhD work on the ecology of motherhood, and was intrigued by and committed to understanding the particular challenges that a female mammal experiences when she tries to get an offspring through to weaning and beyond in a semi arid, challenging environment with predators and droughts and limited food and social companions, who as we've said, are both, can be both allies or competitors. And that book became that PhD dissertation became another classic, the 1980 Baboon Mothers and Infants. And that and that was the book that led me to discover as an undergraduate, the Amboseli Baboon Project, and I joined in 1984 as a newly graduated undergraduate who wanted to really get down to the nitty gritty of animal behavior, and understand how animals solve problems.

Matthew Zipple 09:18

At that point, how much previous experience did you have studying animal behavior and primates specifically?

Susan Alberts 09:25

So I studied for my senior honors thesis in college at Reed College, I studied a captive group of siamang, which are one of the small bodied apes, native to South and Southeast Asia. And it's a species in which there's very pronounced paternal care. And in particular, when the infant matures, it starts to transfer to the father and gets carried quite extensively by the father and I was really curious about that, that transfer from mother to and carrying. It's not seen in the other gibbons, the other small body shapes, it's particular to siamang. And it seemed just a really interesting behavioral question about how that happens. And so I did that study as an undergraduate, and eventually did actually publish it and found that somewhat surprisingly, the infant did a lot of the initiation of the transfer. It wasn't really the male or the female who were who were doing that the mother or the father, it was the it was the kid who was initiating that contact and carrying with the dad. And that was all I'd had. And I wrote to Jeanne, I wrote her a letter that was back in the days when we wrote snail mail letters. And I didn't just write to her, I wrote to several people who were, you know, who had primate field sites, and asked about the possibility of coming to work with them. And, and I had, I was applying for a fellowship that would enable me to spend a year in the field after I graduated, and I didn't know if I was going to get it. But I was, I was excited about the possibility. And not only did Jeanne respond, she called me the day after she got the letter. And that was a that was a very important moment in my life that I've never looked back from. And I would have to say her investment in me was a really big determining factor in how my life played out. So I had had some experience studying primates in captivity, and in a zoo setting for my honors thesis, but I had never, I had never been out of the US when I first went to Kenya.

Matthew Zipple 11:44

At any given time, how many animals are under day to day observation?

Susan Alberts 11:48

So at any given time, we typically have about 300 individuals under observation. It's always a fluctuating number, of course. And we have about, by now we have probably about 2300 animals in the database.

Matthew Zipple 12:06

How can anyone possibly keep in their mind the appearance of 200 or 300 different baboons? What features do you use to allow you to differentiate these animals?

Susan Alberts 12:17

You're right, it is a daunting, a daunting task. And this is probably the right moment to say that we, everything we do depends on a really talented, dedicated team of field researchers who are in the field year round. 365 days a year, year after year after year. The project manager Raphael Mututua has been with us since 1981, even before I joined the project. Long'ida Siodi has been with us for about a decade now. And Kinyua Warutere has been with us for 25 years. And they really are extraordinary observers. And they do it every day. And they know the individuals because they see them every day. And they they recognize them based on physical features, facial shape, body shape, pelage color differences. And so the way that you recognize an individual is, I think, when you're first learning and you don't have what what I like to think of as baboon eyes, you, you have to key them out, you have to say this individual has a notch in their left ear. And that individual has a scar on the right cheek, and this one has a hook in their tail. And after you sort of keyed them out that way. You, you find yourself after a month or two or three suddenly doing this gestalt recognition, where you see an animal get up and walk 10 meters or so. And you instantly know who they are just by the way they walk, just as well as you would know, a friend of yours that you might see down the street, you know, you just suddenly recognize "Oh, that's so and so". And then the transition between sort of keying out the individual, and, and having a gestalt recognition is a really interesting, fascinating one. And once you've sort of crossed that barrier, you don't need to go back and figure out who it is by keying them out.

Matthew Zipple 14:09

I want to be sure that we talked about at least one specific research result from the system. One result that is quite well known and I think is indicative of the kinds of questions you all have been asking in recent decades, is a 2003 Science paper, titled "Social bonds of female baboons enhance infant survival", written by Joan Silk, yourself, and Jeanne Altmann. The title summarizes the result nicely, which is that offspring are more likely to survive if they're born to more socially connected mothers, or I guess, alternatively, offspring are more likely to die if they're born to socially isolated mothers. What was the genesis of that project and how did it change the way that you thought about baboon life history?

Susan Alberts 14:52

It was really Joan Silk who brought that idea to the project. She proposed a collaboration with Jeanne and I, where she said I really want to understand what the fitness consequences are of social relationships. And at the time, back around 1998, 1999, 2000, we didn't have the data that we've had in, you know, in the last five or six years, we've been able to ask "how does social relationships affect survival". But at the time, the fitness component we could most readily measure was infant survival. Survival in the juvenile period. And so we looked at this maternal effect, how does your mother's social connectedness affect your ability to survive the first, this very vulnerable first year of your life? And I think it's fair to say that when we got that result, we were all pretty excited, and astonished. Not astonished because it didn't seem like it could be true, but astonished because it's such an amazing and exciting result. And it I would say, it really opened the door to a very rich, rich set of possible

questions. We realized we could ask about the relationship between social behavior and survival relationships and and other components of fitness, not just survival.

Matthew Zipple 16:13

Changing topics a little bit, I'd like to read an excerpt from a symposium article that Ellen Ketterson published in the American Naturalist earlier this year, she writes, quote: "we often tell students to focus on questions, not organisms. Once the question and hypotheses are clear, the best system for testing ideas will also be clear". She goes on to "write my path has been different. I formed an attachment to an organism and have followed where it led. The result has been a consistent quest for understanding that combines proximate and ultimate explanations for why animals do what they do". You've now spent more than 30 years studying the same population of animals. Do you relate to that different path that Ellen Ketterson is describing?

Susan Alberts 16:56

Yeah, completely, very much. I loved how she wrote that. I read that too. And I loved how she wrote that. When I was in graduate school, the trope that students should be interested in questions, not organisms was a dominant one. And I often ended up feeling I had an inferiority complex about the fact that I was very organism focused. But she, what what she says is exactly right. It's just a different approach, you let the organism lead you to the questions. And, and you are also forced, by the way, if you study one organism for decades, to be extremely interdisciplinary, you have to learn a lot about a lot of different disciplines. To get answers of the depth you want about that organisms life history, I would say that both of the approaches are really valuable, question oriented versus organism oriented, are really valuable in science, in biology, and that, and that people have to introspect and decide which one is more compelling to them. And, frankly, I think you see extraordinary research being done by people who are purely question oriented, and also by people who are organism oriented. And I am, yes, organism oriented.

Matthew Zipple 18:22

Can you give us an example of a question or a family of questions that you all have only been able to ask because of your long term investment in a single system?

Susan Alberts 18:30

So as you know, Matthew, I actually think that long term studies and by extension, a researchers long term investment in one organism, are really valuable because or, or one study system, are really valuable because they allow you to do three things, that shorter term studies don't allow you to do it, at least not in as much depth. One is they allow you to understand processes that can play out over the long term. They allow you to understand systems, by which I mean, interactions, correlated responses, cascades, how one thing constrains another and they allow you to understand how environmental change affects ecosystems, and by extension, the organisms that live in those ecosystems. And I would say that there are examples of all of those types of things that I wouldn't have known about if I

hadn't been watching the animals for a long time. Certainly the question of how events at one stage of life for instance, social relationships during adulthood, affect long term outcomes, like survival, is not something that we would have thought about at the beginning of the study. But as we came to watch these animals and came to understand how much variation there is among individuals. in those in those dimensions, it became an obvious question to ask. Similarly, watching individuals mature and experience such different sets of, of environments, as they, as they develop, raised the natural question of what's the consequence of this variation among individuals for what happens later in life? And, and I think, you know, in the case of non human primates that live in complex social groups, and are not seasonal breeders, these differences among individuals can't be distilled in the way they are for a lot of animals as cohort effects. Right. It's a much more complex environment that, that a nonhuman primate and human primate by the way, phases, and, and it means that individual differences are much greater, and I don't think that that would be easy to appreciate, in a short term study, any given short term study or even a comparison across short term studies.

Matthew Zipple 21:10

We're going to take a quick break. When we come back, we'll talk about the relationship between the Amboseli Baboon Research Project and the surrounding local community, as well as issues related to women in STEM. But first, here's a two minute takeaway.

Erin Siracusa 21:27

Hi there, my name is Erin Siracusa. I'm a Postdoctoral Research Associate at the Center for Research and Animal Behavior at the University of Exeter. I'm a behavioral ecologist broadly interested in the ecology and evolution of social behavior. I did my PhD with Dr. Andrew McAdam on the Kluane Red Squirrel Project, a long term research initiative in the Southwest Yukon, Canada. For my PhD I explored the role that social interactions can play in the lives of a solitary territorial mammal. My research offered important insights in the mechanisms underlying conflict resolution and the evolution of cooperation. By showing that mutual direct benefits gained from interacting with familiar neighbors could reduce time spent on territory defense, and significantly enhanced fitness for both male and female red squirrels. Strikingly living near kin did not provide similar benefits. Importantly, we found that having these long term relationships with familiar neighbors was particularly important in later life, and was strong enough to offset age related declines in survival and reproductive success. Now, this led me to start wondering about the role that social relationships might play in the aging process, which is what I'm now studying as a postdoc. I'm currently working with Dr. Lauren Brent, Dr. James Higham, and Dr. Noah Snyder-Mackler on a collaborative project studying how social behavior changes with age, using a population of rhesus macaques on the island of Cayo Santiago, off the coast of Puerto Rico. Changes in behavior with age, particularly social behavior, is an understudied aspect of senescence. And using this long term study of macaques, we hope to uncover both the causes and consequences of changes in social behavior across the lifespan. Recent analyses suggest that while female macaques narrow their social networks with age, this seems to be driven by adaptive processes and selective choice in partners, rather than the pathological consequences of old age. Importantly, we hope to explore how social aging affects other morphological, physiological, and demographic patterns of senescence to better uncover the role of social relationships in the aging process.

Matthew Zipple 23:28

On this side of the break, I want to talk about two topics broadly. The first is the relationship that the Amboseli Project has with the community of people living in and around the area in which you work. And the second is about women in STEM, and especially women in primatology. And the key role of mentorship in supporting women in STEM. So let's start with the community of people that live in and around the area in which you work. I think this is a topic that most animal behavior researchers don't have to think much about. But I get the sense that you spend a huge amount of time thinking deeply about the relationship that you have with that community, and how to do your work in a way that promotes community development, and a healthy relationship between the project and the community. So first, can you just describe what that community is like, including the community's spatial relationship to the areas in which you work?

Susan Alberts 24:21

Sure. And I'll actually preface this by saying that I think we're not alone in wanting to engage with these issues and with the local community. I think you're right that in many cases, it's neither necessary nor particularly high on anyone's agenda. But anybody who is a long term presence in a community in the developing world, I think at some level grapples with, with this issue. And the community that we live in work in is the Maasai community of the Olgulului-Ololarashi Group Ranch in southern Kenya, they're right on the border with Tanzania. We also engage with the community on the other side of the border, the borders very fluid for the Maasai. And so there's sort of two main Maasai communities that we interact with quite a bit. We are working on their land, our study population is not in the National Park very much. Baboons don't recognize national park boundaries. And so we depend on the goodwill of the Maasai community and also of local tourist organizations that leased some of that land from the Maasai community, who also let us work on their land that's current downy Safaris. And as a consequence of that, engagement with the local community, is, is a really natural part of what we do. It has to be the case that they get something from allowing us to do that. Or it's, it's not worth it for them because they do pay a price. And that's not just with respect to baboons. But with respect to wildlife in general. It's really hard to live with wildlife who are threatening your livelihood. In the case of baboons, you know, the threat is mostly in the form of taking the occasional baby goat, sometimes doing damage to water holes, or wells. But for other larger animals, of course, it's it's it's huge. Elephants, lions, there are lots of animals that pose a real economic and physical threat to the people. We interact with the local communities in multiple ways. We have a fairly large number of what we call scouts, who are people who live and work in the community. And basically, they work on mitigating human animal conflict. And they, they're sort of contractors with us and they also spread best practices in living with non human animals. We have what we call village scouts and field scouts, and the village scouts tend to be women who are living in, you know, smaller local villages who have direct access to children and can teach children things and, and work with children to help them develop best practices for living with animals. And the field scouts tend to be men, and they are out in the field available when dogs attack the baboons or when the baboons take a goat. Or when new people because the Maasai are a pastoralist people, they they, they travel around a lot. And it's not uncommon for people who don't know the Amboseli area to arrive in the Amboseli basin with their cattle for grazing and then our scouts are

there to help tell them look, you're living in a conservancy. And this is, this is how we behave. So they play really important roles. We also pay school fees for children in the community. We also, of course, the community is the main source of the incredible pool of talent that we draw on to become our permanent field team. All but one, all but two, of our field team members have come from the immediate local Maasai community. And it really is a remarkable pool of talent in a country with, you know, fairly limited employment opportunities for people with high school degrees. And it's impossible now for me to imagine how we could. We couldn't do what we do without our field team being entirely Kenyan. It's it's impossible to imagine that. And so that's a very close, and, you know, intimate kind of connection to the community that, that all of our team comes from the community.

Matthew Zipple 28:40

So from that description, it seems really clear that there are mutually beneficial programs for both the community and the project, which I think is the broader point to highlight. Which is that your thoughtful relationship with the community isn't something that you're committed to just because you're concerned about development and justice issues, although you are, but there are also meaningful improvements in the project's research outcomes as a result of that ongoing relationship.

Susan Alberts 29:05

I think that's I think that's absolutely right. Yes.

Matthew Zipple 29:08

I want to turn to a different topic now, which is representation of women in biology generally. And primatology, in particular. When you first accepted your position at Duke in 1998, approximately what percentage of the faculty in the department were women?

Susan Alberts 29:26

I think it was about 15% were women.

Matthew Zipple 29:29

And now depending on which positions you're counting, about 35 to 40% of the faculty in the department are women. So that's obviously still not parity, but represents some pretty clear progress. What has it been like to watch that change occur?

Susan Alberts 29:46

It's been great. You know, I just think, for women in science, there's a very important critical mass issue. And I think that that's why the study of primates, and animal behavior in general, has a lot more women in it than some other areas of biology. It's because the first women that we saw when we were kids watching TV, who were biologists were studying primates. There's no question in my mind about

that. I think the, you know, the fact that women graduate students tend to go to the labs of women PIs, is more evidence of that it's not obviously universal. But the critical mass piece, I think, has been really big. And, and what I've seen at Duke is a real willingness in the biology department to try and build that critical mass. And I've been really happy at Duke. I think it's a, I think it's an open and supportive environment. It's not perfect by any means, but no place is. And I think they've done a really good job of of making it a welcoming place.

Matthew Zipple 30:58

I want to focus in on something you referenced, which is the high number of influential and highly visible women in primatology. Really, from the beginning of the field onwards, I'm thinking of Jane Goodall, Dian Fossey, Biruté Galdikas, Jeanne Altmann, Sarah Hrdy, but there are so many more examples as well. Can you talk a bit about how that visibility shaped the field?

Susan Alberts 31:20

Well, and I think in particular, Louis Leakey's three young women scientists who were Jane Goodall, Dian Fossey, and Biruté Galdikas I think they were a kernel, a very visible public kernel, of women that had a big influence going forward. I think, you know, to some extent, there was a bit of good chance, serendipity, that sort of added people who were otherwise outside that that core group, you know, Jeanne wasn't, had nothing to do with Louis Leakey, Sarah Hrdy had nothing to do with Louis Leakey. But, but there was enough of a critical mass that it was obvious to me, I could do it. And it wasn't obvious to me for a lot of other disciplines, I might have been interested in that I could, that I could do them. I remember when I became a faculty member at Duke, I was one of only two women that had an infant, had children at the time. And I think every woman graduate student that year wanted me on her committee and, and I think it was just because they were so hungry for evidence that they could both have a career and have children. And I was the available evidence. And none of the male graduate students had that question. They didn't need the evidence, there was lots of evidence that it was possible for them to do that. And so I think that's, that's why critical mass is so important, because it's evidence, you can do it. So yeah, I think I think that's why the primate studies in particular have, a have a lot of women. It just happens to be a field that early on, there was a there was a critical mass in.

Matthew Zipple 33:10

You got your PhD from the University of Chicago, working with Jeanne Altmann. How important was it to you, especially in the late 80s, to have a woman as your advisor and closest mentor.

Susan Alberts 33:23

For me, it was determining. There are a lot of people who can thrive in a lot of different environments and have the inner strength and courage and self confidence to realize their potential in almost any environment. I was not one of those people. And I was vulnerable to, or lacked confidence in, a male dominated scientific world. And being able to go into a lab with a woman advisor. It's not necessarily rational, it's not easy to explain or justify, it was determining for me.

Matthew Zipple 34:00

I want to close out staying on this topic of mentorship for a moment. You've received the Dean's Award for Mentoring at Duke, which is a lofty honor indicative of really excellent commitment to your mentees. What advice you have for other mentors, perhaps especially new faculty who are just starting their own labs, or grad students or postdocs that hope to have their own labs in the next few years?

Susan Alberts 34:24

Wow, that's an interesting question. So I would say one thing is approach each of your students as somebody that you have as much to learn from as to teach. And, and I don't say that in a Pollyanna-ish way. I would say that every student that's come into my lab has brought new knowledge and new techniques into my lab in ways that I couldn't because my areas of expertise and knowledge and proclivities are narrow just like anybody else's. And that means being able to understand when you need to get out of their way, so that they can figure out something new, you wouldn't have figured out and bring it into your lab. But also at the same time, you have to provide structure and guidance, that support their ingenuity, their creativity, their, they're pushing the boundaries. And so I think, you know, approaching each relationship in a very collaborative way, is probably the distillation of that. The other thing is, don't be afraid that they'll fail. It may surprise graduate students to know that, my guess is a lot of tension between advisors and PhD students arises from concerns on the advisors part that the student might fail. Not, not that they look at the student and think, "oh, this person is a failure", but because it's about them if the student fails, from their perspective, it's like I wasn't a good enough mentor, or I didn't provide enough. And so that generates more anxiety than you might think, the part of mentors about whether the student is going to make it and is it going to be your fault if they don't? And, and I think to the extent that you can free yourself of that worry, you're going to be a better mentor and a better support to them, because ultimately, it's up to them. And your role is to help them find what's in themselves to finish.

Matthew Zipple 36:24

I think that's a really keen insight. And that seems like a good place to leave it. Susan Alberts, thanks so much for joining us today. I've really enjoyed it.

Susan Alberts 36:34

You're welcome. Thanks for having me.

Matthew Zipple 36:37

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