Audio Interview Transcript:

Private Land Management Decision Making

Erin:
[Cow sound effect] … Land. The U.S. has about 2.3 billion acres of it. Rich in resources, this land is highly productive, with the three main land uses being pasture or range land, forests, and croplands. So, how we take care of and manage it has vast implications for the overall health of our environment—including our air and water. But, who makes a majority of those decisions and how do they go about doing it? Better yet, how can we design policies, incentives, and technical assistance to encourage environmentally and socially beneficial behaviors?

Today on SESYNC Audio Interviews, we're talking with Drs. Robyn Wilson … (Copied clip: Why we're interested in private lands conservation is: You have a minority of people in the U.S. managing the majority of the land. It's like less than 1% of the U.S. population, but 50% of the land and the way they manage it has really big implications for everyone else.) … and Rebecca Epanchin-Niell … (Copied clip: By thinking about a broader set of tools, you might be able to achieve behavioral change in ways that are both more desirable for the individual and also make better use of our public resources.)

[Transition music start] Their recent research focuses on modeling land management decision-making using theories from economics, sociology, and psychology. Soon we'll dive into their findings, but first a little bit more about each of them … [Transition music end]

Erin:

Becky is an associate professor at the University of Maryland in the department of agricultural and resource economics and a senior fellow at Resources for the Future. Robyn is a professor of risk analysis and decision science at The Ohio State University. So to start us off, I just wanted to see what got you both interested in doing the work that you do? Robyn, we could start with you?

Robyn:

Sure. I started as a lot of, I think, people do when they're considering options for college. I loved nature. I loved wildlife and I thought, "Oh probably biology. That's what you do with something like that. Maybe I'll be a veterinarian." So I went to college and quickly realized I liked macro-level conversations much better. So I switched into kind of conservation biology and ecology. And then my senior year I was doing an honors thesis and it was focused on whitetail deer management. And I had this realization moment that wildlife problems are people problems. [Light bulb sound effect]

Robyn:

So when I went back to graduate school, I started looking for more interdisciplinary programs, places that would think both about the social and the natural system and how they address wildlife issues and met a decision scientist and the way he described his work to me, I was like, "Oh, *that's* what I want to do." So I wouldn't have known what it was coming out of undergrad, but meeting someone and having them explain what they did and how they brought these different pieces together got me interested in

social science. And so then I just kind of pursued that path of becoming a social scientist, but within that space of environmental problem solving.

Erin:

Awesome. Thank you. Becky, what about you?

Becky:

There's a lot of parallels in our stories and I feel like a lot of folks who end up working in this interdisciplinary field have some version of this story: Growing up and feeling really connected to nature. I actually was born in Southern California. So [I] spent a lot of time collecting bugs. I thought I was going to be an entomologist when I grew up. Then later on thought, "Oh, maybe I'll be a doctor." I like understanding systems and fixing them. And then I discovered earth systems, which is really understanding how ecosystems interact. And that was my major in undergrad. One of their requirements for graduation was to take an economics class. And at the time I was like, "Economics, that's the source of all evil," [I] totally did not understand.

Becky:

Didn't know what it was. But I took [an] environmental and resource economics course my senior year and suddenly realized, "Oh my goodness, this is a framework for understanding decision making and identifying tools to try to influence decisions in ways that you can end up with better environmental outcomes." And that sort of changed my path—bringing together the economics with the natural sciences to think about how we can improve sustainability of ecosystems. [Seagull and boat engine sound effect start] Now I'm teaching a class on the Chesapeake Bay. And one of my favorite things about it is bringing together the natural science disciplines and the economic perspectives [sound effect end] in hopes that I can reach people earlier than I got reached, to understand the ways in which social science can help us address environmental challenges.

Erin:

[Transition music] So today, we're talking about their SESYNC project entitled: Advancing behavioral models of private land stewardship to improve environmental policy.

Erin:

When you are talking about behavior, what scale are you looking at? Is it individual or group or how did you define that scale?

Becky:

We were really focused on individuals because we were thinking about private land's conservation context. And in general there are individuals or families, more individualized units that are making decisions about what to do, what practices to implement in the land, how to use the land, but those are being made within a broader social context. Whether it's the need to cooperate with others, whether individuals are interacting with their neighbors or trying to consider intergenerational choices, but it is individuals making choices on parcels of private land was the context that we were focused on in this case.

Robyn: And so ultimately at the end of the day, we're focused on the individual as the unit of analysis or as the decision maker. That individual's going to go through a process of interpreting what's going on around them in the world.

Robyn:

They're going to develop assumptions, beliefs, kind of perceived consequences of the different behaviors or conservation actions that are available to them. And then they're ultimately going to make a decision. Those decisions are going to aggregate across all of the individuals in whatever landscape you're interested in and then that's going to pose actual consequences, right? Because … why we're interested in private lands conservation is you have a minority of people in the US managing the majority of the land. It's less than 1% of the US population, but 50% of the land [record stopping sound effect; Erin: I'm sorry, what? Who? How much land? Don't worry, we'll get into it.] … and the way they manage it has really big implications for everyone else. Whether you're thinking about water quality, whether you're thinking about climate change, right? There's a lot of important implications of that. So those aggregated individual decisions across that landscape are going to feed back and have consequences for other individuals in society.

Erin:

OK, so. Who are these people? And what types of land and land management decisions are we talking about?

Let's first start with some easy math here: If there are about 332 million people in the U.S. and about 2.43 billion acres of land, what Robyn was saying is that roughly 3 million people own over 1 billion acres of land. But to break it down even further, an article by Bloomberg in 2019 reported that just the top ten individuals or families own between them about as much land as the entire state of West Virginia. Which is to say that they own anywhere from over 900 thousand to over 2 million acres, each.

But, if we are simply considering the profile of the *typical* individuals and the types of land and land management decisions they are making, examples could include: Large ranch owners, considering whether to fence their cattle off from streams; timber-owning families or corporations, deciding whether to implement controlled burns; or cropland owners deciding if they'd like to plant cover crops.

The problem here is that, for instance, if a ranch owner chooses not to fence their cattle off from a stream, this could pollute the water with nutrients and bacteria. This danger is particularly high because regulations vary greatly by state or in some instances are entirely voluntary.

[Transition music]

Erin:

You also had a recent paper that came out called Private Land Conservation Decision Making, an Integrative Social Science Model. I was curious, what did you find were the limitations of previous models and how did you want to improve upon them?

Becky:

So I was coming at things largely from an economic perspective and actually got introduced to kind of the broader sets of social sciences in a prior working group that I was in with Robyn, which was fantastic.

Robyn:

We owe our relationship to SESYNC.

Becky:

We do.

Robyn:

I don't know if that's been shared, but we do. Three projects.

Becky:

Yes. As I'm working on a lot of bio-economic modeling of environmental systems—and while there's a whole field of behavioral economics, that brings together a lot of the psychology and sociology with the economics, trying to integrate that into economic models—that really has been slow to reach thinking about conservation and ecosystem related problems. And most of the models that bring together these disciplines really are starting more from a psychological perspective. And each of the different models that have been put together to think about how to model private lands decision is missing some component. And we really want to be able to bring those different components together.

Erin:

Awesome.

Becky:

And I might defer to Robyn, I think she might have a better descriptor of that.

Robyn:

No, I don't know that I have a better descriptor. I think you're right. I come from decision science, which is largely judgment and decision-making research, a little bit of behavioral economics. And I would say that generally coming from more of a psychological perspective, you could even argue that psychology's been very late to the game for a lot of environment and natural resources issues in terms of engaging psychologists and thinking about what role they can play and solving some of these challenges. But now that they're in the game, I feel like there's a bias in some of the literature that I'm used to that has this very socio-psychological focus. And then a hand wave at other things, kind of a section of a framework or a model that says, "Oh yeah. And there's other things about the context that might influence people's choices." And you don't know what to do with that.

Robyn:

What gets overlooked in psychology is when that individual's going through that process of forming their beliefs and deciding what's consequential or not, and how they should think about this decision that they have to make. They're just a person they're in this bubble, but around them is a million things influencing them from the environment that they're in, what the local water quality is, what the national, regional and local policies are, what sort of social groups they involve in and what messages they're getting from them, their household dynamics. Am I just a farmer by myself or do I have a partner who's helping me? And then there's the piece about the individual. So I might form very different beliefs if I'm someone who's older versus younger, right? Or who has a personality type that's very freewheeling and fly by the seat of my pants versus someone who plans for the future.

Robyn:

So for me, it's been this recognition that in my discipline we focus on the individual and we wave our hands at these other things that matter. And there's very few thoughtful efforts to bring all those pieces together, talk about how they interact or what that integration would look like and how you would empirically measure that and what that would mean for how you engage people differently. So this was an effort to start to, like Becky said, pull some of the dominant perspectives together, certainly not all of the perspectives that are out there.

Erin:

Great. And what are those disciplines that are being integrated in the model that you guys created?

Robyn:

We focused partially due to the expertise of the team, but also partially due to the, again, what's dominant in the literature around private lands conservation. So we focused on economics, psychology and sociology. We had some other members of the team who brought in different perspectives. We had an ecologist on the team, a more traditional ecologist. We had someone from more of an anthropology sort of background. And so there's certainly other perspectives that are very relevant to this within the social system and obviously the full natural system. But we decided to focus on these pieces that seem to dominate the literature and also have some natural integration points that we could further develop.

Erin:

Great. And were there any challenges in integrating these fields? I'm sure there were.

Becky:

That's a funny question in that we came into this thinking, "oh, our first meeting we'll spend the first day getting everyone on the same page, kind of put our model together. And from there, we can then launch into the policy tools piece of it and the model development." And lo' and behold, we were very misled in terms of what that integration would be like. Each of us was bringing a variety of perspectives together, but we had different languages even when we had the same concepts and same sort of theories as part of our background, we often use different words or ways of discussing it. And in other cases, there's entire concepts missing from each person's understanding of the social context, the social processes that had to be taught and learned in order for us to be able to actually figure out how all of the pieces fit together.

Erin:

Why do you think it's so important that we do integrate these fields to come up with more robust models?

Robyn:

I have some thoughts on that and it kind of relates to maybe my path of how I got here as well, that I came to this realization as more of a natural scientist originally that we can't solve environmental problems without attention to the social science. So it's like first I had to have that realization that like, "We're not going to solve a lot of these issues that I'm passionate about and I'm interested in without people who are paying attention to the human system." And now I guess, as I've evolved as a social scientist, it's like, "Well, we can't solve these social problems without attention to all these different aspects of the human system or these different perspectives on what drives decision making." So if we stay just like we're trying to push people to integrate across natural and social, even within social, there are clear boundaries and silos and we need everyone at the table to solve these problems.

Becky:

Exactly. And if you're trying to address environmental challenges and you're only taking one perspective to addressing it that perspective might be spot on on parts of it, but you're missing a whole set of tools in the toolbox, a whole range of factors and processes that are influencing those decisions. And even from an economic perspective, incentives are worthwhile. In many cases incentives may not be enough and you need to bring some other tools to the toolbox. Or in some cases you may not need to actually change the incentives and you simply need to change other aspects of the context or how information is being perceived.

Erin:

And I think you were kind of starting to talk about this a little bit, Becky, but I was just curious, what is the status quo of the relevant policies and management decisions? How are they made now?

Becky:

A lot of the policy process is really dominated by economic perspectives where we might think about how regulation or incentives, taxes, or subsidies or cost share programs might influence decisions to be able to achieve the outcomes that we want.

Erin: To give you an example of an economic policy tool, let’s take a look at cost share programs.

Cost share programs pay for a percentage of conservation practices that are established and maintained by the landowners.

For instance, in one such program, technical and financial assistance is provided to landowners to help them to convert highly *erodible* cropland to permanent cover—such as native grasses, trees, wetlands, etc.

In exchange for implementing these behaviors, these folks receive an annual land rental payment, plus up to 50% of the costs to establish the practices.

Becky: But, in many cases raising the price may not be enough, or you might have to raise it to pretty absurd levels to change behavior. Whereas by thinking about a broader set of tools, you might be able to achieve behavioral change in ways that are both more desirable for the individual and also make better use of our public resources.

Robyn:

Yeah. And I think that's the piece that sticks out to me is the kind of lack of targeting. First we rely almost solely on these kind of economic tools for motivating changes in behavior, and they certainly have their place, but they're not the only set of tools out there. And then when we use them, we don't even target them. Right? We just say like, "Oh, well, here's a cost share program. It's X per acre. And it's a kind of self-select who wants to come do it. Everyone gets paid the same, regardless of what those outcomes are." There's even weaknesses, I think, in how we apply those tools. And so we're hoping that through this work, it helps people kind of broaden their perspective of the tools that are out there and even the tools we're using, how do we use them more effectively?

Becky:

Yeah. And I'll throw in another one, I feel like the other piece that you often hear is like, "Well, just better education. If people had more information or understood what the environmental consequence of that decision was, you'd change behavior." So that's sort of the separate perspective and that's often referred to as the information deficit model. And it's very easy to say that of like, "oh, if we could just quantify the benefits." And in many cases that's for many reasons, which is a lot of what we end up talking about and tackling in our model. Information doesn't lead to behavior change by itself in most cases.

Robyn:

Yeah. I think there's also this kind of temporal trade off, right? Between tools too. So incentives, especially in private lands conservation are probably critical for the majority of landowners to get started, but we don't have enough money to pay everyone to do these things forever. And so I think there is this role for other tools to come in. And I have a friend in social psychology that refers to it, Dr. Ken Fujita, we were talking the other day about this, about how you switch someone from doing something for an extrinsic reason, like "I'm being paid." To doing it for an intrinsic reason. It's the right thing to do, or this is what we do as private landowners to protect a public good. And he talked about, you have to create goal confusion.

Robyn:

So you have to start with that payment. And then you have to create this confusion about like, "Why am I doing this?" So that when the payment goes away, they'll keep doing it. Because there's plenty of evidence that when the payment goes away, people stop doing the thing that you were incentivizing them to do. So I think there's perspectives in what we tried to pull together that are meant to kind of help promote that more sustainable change over time. If we run out of money, if we don't have enough money, if we can't pay people forever, we've got to have some other tools in our toolbox that help grow that more kind of intrinsic motivation to do it.

Becky:

Just the idea that there's that cost of implementing these behaviors can be a barrier. You are trying to get people to implement something that's providing a public good. So in many cases, the benefits are not necessarily being accrued to the person who's implementing the behavior. And so if the costs are too high, you're not going to get that behavior. But in some cases, even if you reduce those costs, you still won't get that behavior. So it's both this persistence piece and recognizing that money is not always the only constraint to encouraging people to implement a behavior.

Erin: But what are some of these non-economic tools? In their paper, Robyn, Becky, and their colleagues discuss some social and psychological tools that may be useful. For example, by encouraging behavior uptake by key influencers in a community, this can promote more widespread adoption through social connections and social learning.

Erin:

Could you talk a little bit about, from a technical standpoint, how you integrated these methodologies?

Robyn:

A lot of conversation, a lot of summarizing and revisiting the literature and then just iterating. I think we came in with these grand plans and we'll just throw this framework together and then we'll go do some empirical work with existing data to test it out or we'll develop these kind of policy tools that let people use the framework to help identify what's going to be most effective for them. And we're working on those pieces, but we spent a ton of time just all feeling like what we pulled together in this initial paper was really comprehensive without being too much, was still useful. There was a lot of iteration, a lot of bringing those diverse perspectives together and talking until you figure out that what we pulled together feels representative, but also feels useful for people.

Becky:

It was really fascinating...Each discipline has a range of different theories or a range of different processes or different factors that are kind of involved and they interact in ways that you might not think about when you're focused on things from a single disciplinary perspective. And so there was a lot of nitty gritty about talking about how perceptions are formed and what role do values versus context play in that. And how does that influence decision making? A lot of this, we ended up developing using conceptual models. So trying to visually represent how the different pieces fit together. And by the end, I think we had 65 different versions of our model over the course of this as we just tried to work to make sure that everybody...The pieces that everyone thought were important were embedded in that framework.

Robyn:

I think it's also, it's insightful for your own discipline too. Because I find these sorts of teams where I have to learn how to communicate what I think the status quo is in my field or how people think about it. You want to present all the complexity, right? You want to be like, "Well, I don't know. There's 50 behavioral theories about how to protect yourself from hazards and they have all these complex pieces," but I would find myself through this group and other similar efforts. It boils down to these two things, do you care about this problem enough to do something about it and are the solutions perceived

as feasible and effective done? Done. That's like all of behavioral theory wrapped up in a couple statements.

Robyn:

So I think it's even insightful. And part of that process is figuring out how to take what you think is a complex discipline of perspectives and boil it down into something that actually can be then integrated with these other kind of pieces that people are bringing together. So I often find it even there's that that has to happen as well, that you kind of learn how to boil down what you do into something very simple that can be represented along with other perspectives.

Becky:

Yeah. And there's a lot of overlap in turn in the disciplines, which was great that you have that overlap between the disciplines. But then when you're trying to put things in boxes and say, "Well, is the economic perspective represented?" And it's like, well, which piece is exactly the economic piece versus where it overlaps more with sociology or where it overlaps more with psychology and vice versa for the different disciplines? But rarely do you see all of those pieces brought together.

Becky:

It's fascinating because most of the time the models that I write down are mathematical models and rarely do you use conceptual models in that same way. So it was a very new, different way of trying to put equations into boxes and arrows in ways that can meld the different perspectives.

Robyn:

Which I have the exact opposite problem. I never write in equations. I work with a lot of economists who think and write equations. I do almost exclusively interdisciplinary work. And so the amount of meetings where we're like, "Where's the whiteboard? Where's the whiteboard?" But usually it's arrows and bubbles, that's how we can communicate with each other is find a way to like, "Okay, we have to visualize this and we have to start mapping it out and we'll fix it as we go." So yeah. So it's interesting.

Erin:

That’s cool. Could you kind of paint a picture or describe the model that you created?

Robyn:

Well you have the individual making a decision. So we have this box we call belief formation and decision making process.

Robyn:

So we started thinking about what are all those things happening around that individual that are influencing their beliefs? And we've called that box the decision context, where you have these big macro and micro structures that influence the individual, you have things about that individual that are more static, their sex, their age, while it changes you're in an age cohort that's static, your kind of disposition or personality. And then you even have things about those behaviors you might be considering that could influence the way you think about them, right? Behaviors that are easy to

observe versus not. When we think about private lands conservation, there's things you could be doing as a landowner that everyone else can see and there's things you could be doing that no one's ever going to know you're doing it. And so the consequences of those behaviors are very different from you in terms of the social approval or disapproval that you might get.

Robyn:

So that's kind of how we thought about that is you've got this individual making decisions. Those aggregate decisions have influences on others. That individual is influenced by what's happening around them. And ultimately as those decisions aggregate and create consequences for others, it can even change that decision context where suddenly the water is cleaner than it was before. And so now, that impact of the local environmental quality is different on that decision making process. So we tried to also capture that sort of feedback loop. I think that goes from the individual decisions across the landscape and then back to influencing, maybe changing some of those social structures, some of those natural structures, even changing the policies. If a environmental goal is achieved, the policies might shift and change. So again, that kind of dynamic piece.

Becky:

And I think it's interesting because when we think about this figure, like Robyn was noting, there's certain components where particular disciplines focus more on certain components than another. Economics, we tend to think about the different consequences of the behavior in terms of you have your environment. So the economic environment, the natural environment might influence how your choices influence the environmental outcomes or the costs and benefits that you face. And that would feed into a decision…

Becky: You're learning over time, your resources are changing over time. Your soil conditions might be changing over time. The habitat availability or the fire risk on your parcel is changing over time based upon past decisions. And that's therefore changing the context of future decisions. Your beliefs are being updated over time. As you observe different behaviors being implemented on landscape or you have experience with implementing different behaviors, you have feedbacks at the broader scale.

Becky:

You think about how increasing incentives for conservation programs can lead to land moving out of agriculture, which could have influences on commodity prices that have influences on future decisions. You could think about the more individuals that are beginning to implement a particular behavior. Particularly if that behavior is visible, then you might change the norms around that set of behaviors. If you have a species that's at risk and if habitat continues to degrade, that species might get listed and that changes the regulatory context in the future. And so you have these different feedbacks that are then changing both the individual's attributes or individual's resources, for example, and that broader context in which future decisions are being made and therefore changing future decisions.

The piece that we often focus less on in economics is how the potential or likely consequences of that behavior may be quite different than the perceived consequences of that behavior. How individuals think about or anticipate consequences can really be shaped by the social groups that they're in, where they're getting information from, or even their values.

Becky:

How you interpret information is shaped by your initially held beliefs. And that's a piece that I found a really important and interesting component to feed in. We see that all the time with what news station are people listening to. You're getting your information from different sources and that can really shape what makes a decision. And also in economics, we typically focus more on very systematic decisions where you're thinking about implementing decisions in a very systematic deliberative way, versus one's-

Robyn:

The cost benefit analysis.

Becky:

There we go, yes. And versus more heuristic ones where look, "Oh, my neighbor's doing it. Sure. I'm going to see where..."

Robyn:

Must be a good idea.

Becky:

"They're controlling their weeds. I wonder how they do it. Let me ask. All right. That's what I'll do."

Robyn:

Yeah, yeah. Yeah. I think what we pulled together, like Becky was laying out, kind of points out where the flaws in our own disciplinary thinking are. The psychologist would go perception is reality. Who cares about the real consequences of behavior who cares about the structural context and how it's influencing that individual. All that matters is what that individual believes and how those beliefs translate into behavior. Right? There's this very strong focus on the kind of cognitive and affective processing of the individual when they're making decisions. And we wave our hand, there's all this stuff going on, but we don't actually care about that because we're looking at this thing we think is the biggest antecedent of behavior or something. Whereas like a sociologist, which I'll pretend to be for a second and I'm not, would focus more on that context and we'll go, "well, we're going to wave our hand at the fact that there's variation at the individual level, but we're going to talk about how these structural features of the context are driving people's realities and driving the sorts of choices they can or can't make."

Robyn:

And it's all right, right? None of that is wrong. But by waving your hand at one of those other pieces, you're not getting that full picture.

Erin:

I became curious about the relationship between perceived consequences and potential consequences as I was looking at your model. So that's interesting that they kind of either aligned perfectly or kind of work in opposition.

Robyn:

Or they don't. Yeah. I guess that's one thing be, and I maybe didn't call out as explicitly, but in our framework we have these potential consequences of behavior that are a potential reality coming out of the decision context. So based on this current state of the environment, based on current policy, based on a variety of, again, things that are kind of known, and then that feeds into that decision making process where an individual may or may not accept that reality, right? You just think about the pandemic right now, there's the truth of what's going on and then there's very different opinions on both ends of the spectrum as to whether we're safe or we're not, we should wear masks or we shouldn't. And so we tried to draw out there are these potential consequences that come out of some sort of objective truth.

Robyn:

There's the way that people perceive those driven by a lot of things about that individual and the kind of context they find themselves in. And then at the end of the day, there are actual consequences that come out of those decisions being made. And so whether we're talking about private lands conservation or pandemics or whatever it is, I think that's true, right? That there's these things that could happen. There's our kind of beliefs about what's really consequential or how we feel about it. And then when we act, there are real consequences that come from that that feed back into society and as a risk scientist that's one of our fundamental things we're looking at is do people's perceptions align with reality and if not, should they, and how might we engage them to increase that alignment?

Erin:

And I know you guys kind of evaluated in your paper, people thinking about these decisions either in more of a heuristic way or more of a…

Becky:

Systematic.

Erin:

Yeah. Systematic. Okay.

Becky:

Systematic.

Erin:

So could you talk a little bit about that difference? And I'm curious, do some people fall harder on the spectrum in one way versus the other and are there some people that are sort of in the middle and make decisions based on both of those things?

Becky:

So for definitions you could almost think about it one is sitting down and having a spreadsheet out and you're writing down what all the pros and cons are of a decision. And in a business or an economic context, you'd be actually writing down perhaps financial cost and benefits of different choices, but thinking more holistically about the range of pros and cons or costs and benefits of a different decision. Actually writing them down and weighing them in a very systematic format versus making a more

heuristic decision. And there's a whole range of ways to make more heuristic decisions that can be based more on emotion or by looking around and seeing what others are doing. So more of a social learning type approach or more of a satisfying approach where once you figure out a choice that may be good enough, you go forth with that. And I also, I think there are ranges. People tend to be more on one side spectrum or another, but it also varies a lot depending upon the type of decision that's being made.

Robyn:

Yeah. I mean, I always always tell my students we all have the ability to do both, right? That's how our brains are designed and functioned. And in reality, we use the heuristic approach more than the systematic one because if you think about the decisions you make over the course of a day, from the time you get up to the time you go to bed, if you had to make a spreadsheet every time you made one of those decisions, you would be in a world of hurt. So we've evolved and adapted to have these little mental shortcuts that actually help us navigate the world pretty quickly. And that's great. I want to use those when I'm ordering food at a restaurant, I don't want to have to create a utility calculation for every entree on the menu and then decide which one is maximizing my utility.

Robyn:

So we have shortcuts that we use based on our past experience. Things that have served us well that have been kind of adaptive. That rule has worked well for me. So I'm going to apply it in the future. And one we worry about I think a lot in the environmental context is the human tendency to kind of do everything we can to avoid losses in the near term. That's a very strong human tendency. And so we might look at a decision like, "Oh, I'd like to eat healthy and exercise more so that I can lose weight." Well, that's very nice. But in the short term, what that means is not eating food I like, it means not sleeping in as late. It means not doing a lot of stuff I like. And so my tendency is going to be to be like, "no, I'm going to discount that thing happening in the future and I'm going to do everything I can to avoid those losses now, which is giving up the food I like and giving up my free time."

Robyn:

And so again, it might make sense. It might be adaptive for us to try to get all the good stuff we can right now and not worry about the future, but there are certain problems where that will come back to bite us in much bigger ways. And so I think that's some of the kind of tension for environmental challenges is maybe we do need people to think a little more systematically and learn how to weight those future outcomes more appropriately and learn how to kind of give up some of those things in the near term, even if it's painful. So making sure that people, if they're using those sort of shortcuts, they're using them appropriately and they're full aware of what the consequences of those choices are.

Robyn:

Because future me might be really upset with current me when I end up with an illness or I die early from being unhealthy. But it's easy to ignore future me and just worry about current me. That's just one example. Like Becky said, there's tons of heuristics out there that have been identified as these kind of shortcuts we use that can lead to kind of predictable biases in our behavior. And again, they're probably great 90 to 95% of the time, but they can get us in trouble for certain choices.

Erin:

What are the big picture goals of this model? What is it designed to do?

Robyn:

Yeah, maybe we can each tackle one of the goals, but one was really to guide future empirical work. So to maybe stop some of the hand waving at the things we know are important, but we don't take the time to seriously consider them and be like, "Well, can I capture some of that in the work I'm doing? Can I think strategically at some scale about how those other pieces might interact with the things that I'm typically interested in?" So we were hoping to kind of lay out a framework where people could look at that and by no means test the entire model or the entire framework, we're not sure how that would even be possible, but to look at it and very strategically think what data do I have available? What pieces of this structural context might be relevant to what I'm studying at an individual level?

Robyn:

And can I measure those things? And can I consider a research design that would bring in more of that variation so that I can actually look at how maybe differences in natural capital might interact with the way that a landowner perceives the consequences of their actions across space. So again, not measuring everything, not testing all of the interactions, that'd have to be a data collection at the scale of the United States. But just thinking strategically about what pieces of this could I kind of expand beyond maybe my little view of the world and bring in a few of these other pieces and start to test out how the pieces work together?

Becky:

Yeah. And just to build on that piece, also just be able to recognize when you are focusing in on a particular piece which you may...What are the other pieces that might be interacting with that that if you fail to account for, or fail to consider their influence, are you going to get the wrong answer for the particular piece that you might be focused on? So yeah.

Robyn:

Yeah. And then I think the other big thing that we were hoping would come out of this is to help guide the design of policies and programs that again, instead of saying, "Well, we just provide incentives. We provide incentives per acre for farmers to do conservation," as an example. To think like, "Okay, is that the main barrier here? Is that really what we need to do? Or is it something else? Or could we use some other tools as well that might kind of shift the social context in some way that we get more people engaging in that incentive based program than we do currently?" So that we get more benefit from that particular tool if we still think we need it.

Robyn:

So it's meant to kind of help people almost kind of diagnose, if you had a checklist, if you were trying to design a policy or a program for a particular group, you'd have this kind of checklist where you could walk through and think like, "Well, what role is this playing in that decision? What role is this playing?" And by doing that, maybe you identify the real pinch points and you realize...A critique we hear in the kind of agricultural conservation space is that incentive based programs don't work, because we're not solving the water quality problems.

Robyn:

And you can either say from an economic standpoint, we're not paying them enough, which there's some truth to that. Or you could say, "Yeah, they work, but we're designing really crappy programs and we're not removing some of the other barriers that are preventing them from engaging in those programs." And so I think we need to kind of take a step back and think more strategically about what's really driving those choices and where are those pinch points and what can we do to fix them or to remove them.

Erin:

The last question, what is each of your favorite things that you get to do with your work?

Becky:

Well, I was going to say this working group is a perfect example of it. It's getting to work with people, great people who bring diverse perspectives. You're getting to learn new things. And my favorite part is that generally tackling real world challenges, often working with stakeholders to identify particular challenges and then figuring out how to bring these different sources of knowledge together to be able to address those problems. And so the fun of learning, but then the actual getting to try to inform decisions that are being made on the ground is very rewarding and fun.

Robyn:

It is. No, I would say the exact same things and whether that's like, why do I participate in SESYNC projects? Why am at a land grant institution? Why am I in an interdisciplinary school filled with natural and social scientists? It's all kind of the same. I want to solve real world problems. I want the science I do to translate for decision makers and managers and for people who can make the world a better place. So that's for sure one of the rewarding things. And if I was just doing research in a vacuum, I wouldn't enjoy it because I love that science policy interface, but also just the personal rewards of being around cool people who think differently and every day is a different conversation. Everything's new all the time because I feel like I'm constantly being exposed to different ways of thinking and different problems to work on and that variety is nice as well.

Erin:

Cool. Yeah. So you're always learning and growing.

Becky:

It was complex and it was hard and it was fun.

Robyn:

Yeah. It was complex and it was hard and we're still working on it. We still have lots of cool things coming out of it. And I think that's part of SESYNC. You spend a lot of time kind of building the relationships and getting the ideas. And then often, I mean, I'm still working on stuff from at least one other SESYNC group that's even older than this one. So I think there's a lot of value to what these groups do in terms of their long-term relationships and networking. And like I said, Becky and I met on a SESYNC group and then did two more together. And this one is really, this I should say, I feel like this is Becky's baby. Because she called me and said, "I have this idea. Do you want to help me out with it?" And I was

like, "Sure." So yeah. So we appreciate what SESYNC and other organizations like that do to support this sort of work.

Erin:

Awesome. Well, thank you both so much. This has been really fun to chat with you and learn more about the awesome science that you're doing. So I appreciate it.

Becky:

This was very fun. I know. Thank you.