Announcer:

The Missouri State Journal, a weekly program keeping you in touch with Missouri State University.

Nicki Donnelson:

In northern Michigan forests lives the white-footed mouse. Among other small mammals, it’s a fierce competitor in the food chain. However, this animal struggles to survive through harsh winters. Tracking the population size and location of this mouse can serve as an indicator of climate change. I’m Nicki Donnelson, and today on the Missouri State Journal I have Dr. Sean Maher. He’s an associate professor of biology at Missouri State University who studies small mammals and their habitats over time.

Dr. Sean Maher:

So, a bunch of it is environmental measures. Things like aspects of the habitat, what plants are there, how many plants are there, what kinds of plants are there to kind of better predict if you’re going to get a lot of mice, few mice, how habitats around an interesting habitat influence our focal place. So, things like do you have a lot of agriculture around a prairie patch? Does that influence how many mammal species we get in a patch? If you have a lot of forest around there, do we get different types of species, different counts of species? Down at our field station, how does long-term management influence which species we get?

Nicki Donnelson:

The university was gifted a new parcel of land adjacent to Bull Shoals Field Station that has been largely unmanaged. For the past four years, Maher’s team has used camera traps to get an idea of the mammal count on this part of the property.

Dr. Sean Maher:

So, a camera trap is a device that has a little infrared sensor on it so that when it’s set on a tree or a post or something along those lines, if something walks by it takes a picture. And what that gives us is a passive measure of what’s there. So, we don’t have to be present in that local environment for long periods of time. We can set those cameras for months at a time, come back and then do an inventory about what we get. And so, it can really be an efficient way to do surveys that don’t influence the animals in any way because they just walk by, and we get a picture of them.

Nicki Donnelson:

While Maher is a mammologist, he focuses on mice and rats because of their abundance regionally and what they can shed light on in the fields.

Dr. Sean Maher:

We've got several species of mice here in southwest Missouri, and some of those mice really like specific types of habitats and some of them don’t. They’re generalists, so we find them in a variety of places. So, if we can do surveys and identify which mouse species is where, we can get a better picture about what’s happening in the general environment because if we get a very habitat-specific mouse, one that really likes this habitat and it shows up in that habitat, that’s a good sign. If it’s not there, that might be a bad sign for that habitat, that some other process that we’re not observing is going on.

Nicki Donnelson:

In many cases, Maher says this region doesn’t have deep historical data. This presents a unique opportunity for him and his team.

Dr. Sean Maher:

One of the key things in terms of understanding change is you have to know where you’re starting from. Having a baseline of information of what species are present at a given time allows you to assess in ten, fifteen, twenty years, how things have differed. It’s important when it comes to things like small mammals that do these population cycles so that you go out one year and you don’t find the species, but the next year you find 30 of them in the same spot, which is what happens to us sometimes. So, a baseline has to be – it's not just a quick little snapshot, it’s a little bit more than a snapshot. But if we were to go out and sample a couple years where there wasn’t, say, a cotton rat in some of these patches, and then in ten years we come back and there’s tons of cotton rats, we might assume, “Oh, cotton rats moved in”. But we didn’t sample enough to understand there were cotton rats in that area during the early window of time. So, understanding and establishing the baseline allows us to measure change rather than just kind of assume something’s different.

Nicki Donnelson:

Maher hopes to unveil to students in his class the importance of mammals. In his research, he helps students discover their own particular passions. In his courses, Maher gets students who hope to work in a zoo, want a career in conservation, or seek a medical degree. Though it’s a challenge to develop content with all of those separate needs in mind, it's one that he truly enjoys.

Dr. Sean Maher:

It’s fun for me to talk to the students and hear what they want to do and how they’re actually trying to get there, and that’s always kind of fun. And I'd like to try to make it so that the course material reflects something that they can take away from. So, coming up with different examples and content that they can actually make sense of and then apply is always a challenge, but it’s a fun challenge.

Nicki Donnelson:

That was Dr. Sean Maher and I'm Nicki Donnelson for the Missouri State Journal.

Announcer:

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