

# Fire Ecology Chats: A Podcast Series by the Association for Fire Ecology



## Transcript of Episode 11

Host: Robert Keane (Editor of Fire Ecology and Retired Research Ecologist, USDA Forest Service)

Guest: David Mason and Marcus Lashley (Wildlife Ecology and Conservation, University of Florida)

Link to Full Article in Fire Ecology: <https://fireecology.springeropen.com/articles/10.1186/s42408-020-00087-9>

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**Bob Keane:** Hello, everybody. My name is Bob Keane. I'm the host of the podcast Fire Ecology Chats, which is, of course, hosted by AFE, the Association Fire Ecology. This podcast is all about new and exciting papers published in the AFE journal Fire Ecology. Today, I'm very excited to talk about one of my favorite topics in fire, which is, of course, scale. And we have two people that just recently published a paper in Fire Ecology, which deals with scale and prescribed fire and wildfires: David Mason and Marcus Lashley. David, you want to introduce yourself?

**David Mason:** Thanks for having us on here, we're really excited to talk about the paper as well. I'm a graduate student in the UF deer lab. I study seed dispersal as it relates to disturbances.

**Bob Keane:** And Marcus.

**Marcus Lashley:** Thanks again for having us on really excited to be here and glad to have that paper published in the journal. I'm Marcus Lashley. I'm the director of the US deer lab at the University of Florida. And I'm on faculty there. And I study a broad range of disturbance ecology, but have a particular interest in fire ecology and how we can use it to manage wildlife habitat.

**Bob Keane:** Yeah, this is an exciting topic because most of the people think that maybe we can replace a fire regime with prescribed fire. And I think this paper deals with it quite well. David, why don't you go ahead and talk about what exactly this paper is all about? By the way, the name of the paper is "Spatial scale in prescribed fire regimes: an understudied aspect in conservation with examples from the southeastern United States". So tell us all about it.

**David Mason:** So, it's just that. We realized that spatial scale was going to be something really important with prescribed burns. And we know that from the ecological literature basis, which has all kinds of scale dependent effects. We went through and, sort of, assessed how often fire ecologist were talking about spatial scale, especially data as relates to spatial scale. And then we compared the average size of prescribed burns with lightning generated fires to try to get at that natural fire regime, and the discrepancy between those two things. And then we try to use those scale dependent relationships and processes from the ecological literature to predict and discuss why scale may be important, particularly as it relates to fire. We did that through the lens of species in the southeast.

**Bob Keane:** Yeah, that was really exciting to me when I looked at the size-frequency distribution of fires from prescribed fires versus lightning fires. And they did not match at all. Marcus, what's the implication of that?

**Marcus Lashley:** I think you're exactly right. You know, as a fire researcher, I've been in the field for years and years, and it's kind of dawned on me. I get the question as an extension specialist from private landowners, constantly, "How big should my burn box be?" You know, they're prepping to start using fire to manage wildlife habitat, particularly, and I don't always have a very good answer for them. And reflecting on that there's not that much literature that's explicitly looked at it, like David was saying. When we went through, fire ecologists acknowledge that that's a really important question just as commonly as any other fire attribute. But we rarely do any data driven inference. And even more rare than that was to manipulate it. And I think it's really important because the scale dependent processes we know are pervasive in ecology. And they probably have a fundamental effect on the way a wildlife species or other species in the community respond to it. So, for instance, how well they can traverse the landscape in one that's recently been burned, or when it hasn't recently been burned, for that matter. Those types of processes could really be impacted by the scale at which we're lighting fires. I think that's the important take home. We found that lightning does seem to be mismatched in terms of scale from that a prescribed fire. And that could have implications on the resources that we're using it for.

**Bob Keane:** Yeah, one of the other things that I think the paper actually does very well is it gives examples of why this is important and conservation. David, you want to give us one of these examples. One of your favorite ones.

**David Mason:** I'd say the best example we have in there is where we're talking about some of the ecological interactions, particularly there's more evidence for herbivory. You know, I'm personally excited about seed dispersal. I would love to know how the size of a fire effects of animal driven seed dispersal but there's just not, there's not much evidence, or really any evidence out there at all, to talk about that. On the other hand, herbivory we do have some good examples from. We have some work with grasshoppers, with actually prescribed burns, showing decreased herbivory as you get closer to the interior of the burn. And the other big evidence is from large fires out in the West, in Yellowstone. Regenerating aspen and, just in the interior of the burns, they reported less herbivory pressure on the regenerating aspens there.

**Bob Keane:** Yeah, it's amazing. Marcus, did you guys deal with the whole issue of severity and scale as well? Or was it just fire size?

**Marcus Lashley:** For this, we restricted it to just fire size. We did actually look for the severity attribute as well as several others in the literature and that that's fairly commonly addressed. We did talk about it to some degree in the paper that sometimes these attributes might be correlated. Like you just said, we tend to increase in severity as you increase the scale of fire. I think that's a really important take home is, you know, they're not necessarily mutually exclusive attributes, but we rarely focus on scale. And we do have reason to believe that the interaction strength with wildlife, like herbivory, for instance, might change as you increase scale. I think that's a pretty important concept that we should start thinking about as fire ecologists and formally address with research.

**Bob Keane:** Yeah, I do as well. I think it's an understudied, really important part of fire management. So David, what are your recommendations to, at least, mitigate these scale differences?

**David Mason:** I don't know that you want to mitigate them necessarily. I guess it really depends, like anything else on your goals, your study system. I know, that's not the most exciting answer, but it really depends. It depends on what kind of species you're managing and what your goal is, and what you have to work with.

**Bob Keane:** So, for instance, for seed dispersal, right, you're always burning the same size block, you may be unconsciously restricting the seed dispersal of some of the trees or plants that have a small dispersal distance, correct?

**David Mason:** Yeah, if we're getting towards that area of recommendation. I think that's a good point. We often burn larger blocks for a variety of reasons, when it comes to a management side. But certainly, the larger your block is, the less likely you're going to get seed dispersal towards the center of that block. And if those species are important component of wildlife habitat, you may see some impacts there.

**Bob Keane:** So Marcus, do you think these scale issues are across the United States? Or maybe even across the world? Or are they just for the southeast US?

**Marcus Lashley:** I think that's a great question. I think it's everywhere that's flammable. This is an issue that's in consideration. And just to reiterate, the points you were just making about the take home, I say this constantly as a fire ecologist to people, that, to me the importance of variability in our management approach. We think about variability I season or variability in the return interval. But we should probably also be thinking about variability in scale. Because there are winners and losers, no matter what. There's not one size that fits all, in other words. So, when you were talking about potentially getting too big for some of these processes to happen, you could also not be big enough for those processes to happen there. Particularly, I'm thinking about some large herbivores that are herding animals. They may actually fare much better in much larger burn blocks than they would in small ones, for instance. So, I think that's really the way to look at it, is that diversity is key. And that includes in the way that we light fire and multiple attributes to include scale, so that we can better conserve system processes. I mean, nature burns in a diversity of scales. So, we probably would better approach that with prescribed burning if we also did that.

**Bob Keane:** Excellent point. Thank you two for coming to Fire Ecology chats. Do you have any affiliations or funding sources you wish to acknowledge now?

**Marcus Lashley:** We funded this with funds from the University of Florida, and there's no other funds to acknowledge.

**Bob Keane:** Well, excellent. Thank you two for coming and visiting us with this podcast and I appreciate your time. Thank you, everyone, and we'll see you at the next one.