

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



Transcript of Episode 20 - Potential operational delineations: new horizons for proactive, risk-informed strategic land and fire management

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

Guests: Matt Thompson (Research Forester, USDA Forest Service, USA) and Kit O'Connor (Research Forester, USDA Forest Service, USA)

Link to Full Article in Fire Ecology: <https://fireecology.springeropen.com/articles/10.1186/s42408-022-00139-2>

Article authors: Matthew P. Thompson, Christopher D. O'Connor, Benjamin M. Gannon, Michael D. Caggiano, Christopher J. Dunn, Courtney A. Schultz, David E. Calkin, Bradley Pietruszka, S. Michelle Greiner, Richard Stratton & Jeffrey T. Morisette

Bob Keane: Good morning everybody. My name is Bob Keane. I'm the Editor of the journal *Fire Ecology*, and this is Fire Ecology Chats where we talk to the authors of recent papers. Today we'd like to introduce you to Matt Thompson and Kit O'Connor here to talk about the paper "Potential operational delineations: new horizons for proactive, risk-informed strategic land and fire management." So Matt, do you want to introduce yourself?

Matt Thompson: Sure, thanks, Bob. My name is Matt Thompson. I am a research forester in the Human Dimensions program of the Rocky Mountain Research Station with the USDA Forest Service and part of the Wildfire Risk Management Science Team.

Bob Keane: And Kit, how about you?

Kit O'Connor: Yeah, thanks, Bob. I'm Kit O'Connor. I'm a research ecologist with Rocky Mountain Research Station, Wildfire Risk Management Science Team and Human Dimensions Program, located here in Missoula, Montana.

Bob Keane: Thank you two for coming on today. It's real exciting to have you. Matt, maybe you could give us a quick summary of the paper and tell us exactly what potential operational delineations are.

Matt Thompson: Yeah, potential operational delineations, or PODs as we call them, are really landscape containers whose boundaries are relevant to fire mitigation, control, and containment operations. So think roads, think ridgetops, think rivers. They're containers that are relevant to folks that are on the ground, engaging in fire containment, but we're increasingly learning that they're also really relevant to things like community planning and especially fuels mitigation. PODs have become analytic and operational landscape units that will span ownership, organizational, and functional boundaries. They're useful, as we've learned for summarizing landscape risks, fire ecology information, management opportunities. We're seeing that they're being used in the incident response, as well as the pre planning context to facilitate communication and

coordination, kind of develop a shared language as well as a shared understanding of realistic opportunities, expectations, challenges on the landscape. We hope that they are providing some structure and some best available science to meet the intent of policy guidance and the cohesive strategy among other initiatives. PODs originated with the southern Sierras of California, almost a decade ago. It was very much a management focused idea that I was very fortunate to be involved in as a researcher. And since that time as Kit can probably speak to, he saw the value in some of these ideas and brought it to some existing contacts and relationships he had in the Southwest and we had some great early adopters and success.

If you fast forward to today, we see PODs embedded in a broader set of engagement analysis and planning to strategically manage wildfire risk on, I believe, well over 60 national forests, including partners from other federal agencies, tribal, state, local, the states of Oregon, Washington and New Mexico, their respective resource agencies are engaging in it. The Infrastructure Investment and Jobs Act devoted about \$100 million to support among other things, pod workshops, it's been called out, and things like the Chief's Letter of Intent for Wildfire. And most recently, the Chief just released a report on the prescribed fire PODs and is encouraging employees to leverage PODs not only for incident response, but for fuels and vegetation management planning. So it's been somewhat of a whirlwind. But in the course of just under a decade, it's kind of went from a nugget of an idea that has expanded in many ways. We're kind of expanding the analytics that underpin it. We're expanding, really importantly, the social cross boundary aspects, making sure it really truly is more inclusive and collaborative, not just an agency centric process. And we're expanding in domains. So it's not just planning for incident response, but it's planning for how we better engage our partners and our communities and planning and how we manage fuels to support more resilient landscapes.

And so with that, somewhat long preamble, this paper is really the product of some rumination on, as this tool has been well received by a number of management and other audiences, as we are getting more kind of research interest into how we can leverage these tools—where can we take this? What are the horizons where we can go not thinking necessarily about next year, but thinking over the course of the next 5, 10, 15 plus years? And so the three key themes that we hit out in the paper: first, we really think that they have some value in climate smart forest and fire management. On one hand, they're well suited to kind of facilitate the sort of climate mitigation strategies that we want to be encouraging. For instance, you know, reducing large patches of high severity fire or reintroducing fire through intentional prescribed burns. They provide a natural platform for that. As well as climate adaptation, recognizing we're going to see more synchronous fire activity, more strain on the system, and how we can be kind of more proactive and prepare for that. That segues into the second key point, which is really we think, PODs and the broader planning process in which they embed can be a suitable tool to help us be more agile and adaptive in our response to fire. So that's first and foremost at the incident scale, being more opportunistic for windows of time when we think we can have control. And we've done this pre planning to identify under what conditions certain features are likely to hold and what resources might be necessary to hold, as well as cross incident planning. So really, at the system's level, if we have scarce resources, where can we send them? And what analytics and pre fire planning information can help us determine when we have a limited set of resources to send then there are more fires requesting resources? Where can we be most effective and efficient in that allocation process? And then lastly, leveraging this risk management idea that we not only need to be forward looking, but we also need to be backward looking to learn what works, what doesn't, and continually improve. We think there's some real opportunity to leverage PODs and risk assessments and other information to really enhance how we go about doing performance measurement, knowing that it certainly needs to be a lot more than things like initial attack success and acres treated.

Bob Keane: This really is a wonderful paper that summarizes everything. Kit, I have heard that this is being used on the ground quite extensively. Can you tell us about the things that you've used it for in fire management?

Kit O'Connor: Yeah. Obviously, Matt really did a great job of laying out kind of this broad picture and this vision of PODs. And I think, where the rubber meets the road with this product, and the reason why it really has caught on, is that it is a full engagement of the fire managing agencies and the fire managers themselves. Those actually making decisions, line officers, leadership within other agencies are involved in actually creating and identifying these networks of control opportunities. But then we also work directly with resource specialists and managers, foresters, hydrologists, people from all these diverse backgrounds that are influenced or affected by fire. And we make sure we get their input as well. And so the whole concept around this is that while there are these analytical tools that Matt alluded to that help bring kind of the best available information to decision makers. The decisions are actually made by those who come to the table. And so as this process has grown, what we've seen is more and more people wanting to come to the table. And so we actually get this more deliberative process in advance so that once smoke is in the air, everyone's pretty much on the same page about what the best actions are to take where our control opportunities are and they aren't, and what these likely fire effects will be on the specific values that we're trying to manage for on landscapes. And ideally, across ownerships. That's a huge part of this is understanding that fire just crosses ownerships, as the fuels and the physics and the winds drive it. And so these planning processes need to do the same thing. They need to bring in all those collaborators. So when it comes to an actual fire season test of something like this, PODs now is a significant component of what's called the Risk Management Assistance Dashboard, which is this kind of online clearinghouse for information used by fire managers as they're actively managing fires. It's kind of like a second layer on top of WFDSS, the Wildland Fire Decision Support System in the United States, to provide some more kind of real time, even really some more sophisticated science based analytics to add an additional layer of information for decision makers. And I think one of the really critical things about this is that once these POD boundaries are delineated, they're not designed to be the be all end all, this is what we're going to do in this place all the time. They are just they bring a ton of information to one location so that as decision makers watch a fire progress or work toward managing a fire for a certain outcome, PODs are a really great way to allow that to happen in a way that it's most effective and ideally leads to better outcomes. And we're starting to see this now. There's a new strategic operations branch that was just commissioned this year. And one of their goals is to use these RMA analytics that inform PODs and PODs themselves as the way that they're actually managing fire. And a huge part of it is that they're using this PODs framework to help align kind of these broader land resource management goals of forests and their partners with the fire process itself. So instead of keeping those things, two things stovepiped, it really tries to integrate the natural process of fire with landscape management and all the risks associated with it. So doing the right thing around communities, doing the right thing with wilderness, and ideally, kind of all those spaces in between.

Bob Keane: Wonderful. So Matt, how do we implement PODs on the landscape? What kind of tools do we use?

Matt Thompson: That's a good question. There is no PODs specific dashboard or software in mind. And I don't think that's where we want to take it. I think instead, we want it a) to be somewhat of a living document in the sense that pod boundaries should be dynamic, right? If you have fuel treatments, if you have a large fire, or other disturbance event, the control opportunities on your landscape will have changed. And so we want them to be dynamic. Now with that said, when they're drawn initially, it's very much a geospatial exercise. So certainly ArcGIS or some other other geospatial software. Secondly, many units have uploaded their POD shape files into WFDSS, the Wildland Fire Decision Support System. And it's our understanding that next gen with this will have those same capabilities. And then as Kit alluded to, there is the RMA Risk Management Assistance dashboard that has a lot of those PODs uploaded to it as well. So there's going to be local control of the PODs data as developed locally and then those files when they're vetted and agreed upon or uploaded into kind of other existing systems.

Bob Keane: Wonderful. I like the fact that it's flexible and scalable. It really will be a wonderful tool for fire managers. So Kit, has it been used on fires so far?

Kit O'Connor: Yeah, and in the paper, there's actually a series of examples, but we can really expand upon that too. So going back to as early as 2017, was the first documented use of PODs, specifically following kind of their strategic response to categories that were identified in advance for how they wanted to manage fire within these basically fire containers on the Tonto National Forest. But since that kind of early tests and application, there's been really kind of the snowball effect of more and more land managers hearing about how this is working and hearing how the tracking and the management direction that people they're shooting for is actually coming to fruition. We're actually seeing with the National Strategic Operations Branch, PODs are now becoming kind of the standard for large fire management. So now in 2022, I would say in the western United States, maybe as many as roughly half of the large fires are referencing PODs in the activities that they're planning towards for where the containment lines should be or when they're making these decisions. Back on the Tonto, they pretty much document every single ignition in the context of what POD is it in? What is the feedback response category? And were they able to manage that fire to that category under the conditions during the ignition? Or if not, why did they stray from that and kind of what's the documentation behind it? So what it does is it provides kind of a go-to response, it provides kind of a new default for any ignition. If you've gone through the full quantitative risk assessment process, and actually thought about what the appropriate objective is for ignition within a POD, instead of defaulting to suppression all the time or defaulting even to manage every ignition within this area in the wilderness, it brings in all of those other values, consideration, and the potential for fire transmission outside of that POD to other places. And so it allows you to really balance the response in a way that fits best with kind of the ecological function and the restoration potential and really more like the climate adaptation potential for any piece of ground.

Bob Keane: Yeah, it really is a thing to use the future. Well, I want to thank both of you for coming on to Fire Ecology Chats and talking about this paper. If anyone is interested in this paper, please go to the *Fire Ecology* website to download it. Matt or Kit, would you like to recognize any funding agencies?

Matt Thompson: Yeah, certainly, you know, the Forest Service itself has funded a lot of work. But the Office of the Fire and Aviation Management has been supporting our work for a number of years and without that support and without their connections to managers and on the ground decision makers that actually consume this applied research, I don't think we'd be where we are today.

Kit O'Connor: And I would add as well, so we've had amazing financial support and now even some kind of personnel support from Fire and Aviation Management, but also we've had great collaborations with Oregon State University, the Colorado Forest Restoration Institute and Colorado State University as well to really help scale a lot of this up and more recently now the Forest Service Enterprise Program has taken on a lot of the physical actually ramping up of this effort. So it's moving forward on all fronts not just a research driven thing at all anymore.

Bob Keane: Again, thank you both for coming on Fire Ecology Chats. We have been talking to Matthew Thompson and Christopher O'Connor. This has been Bob Keane, thank you very much and please read *Fire Ecology*.