
Findings from a Third-Party Assessment of the U.S. Forest Service's Risk Management Assistance Teams

Addendum: The 2019 Decker Fire

Public Lands Policy Group at Colorado State University

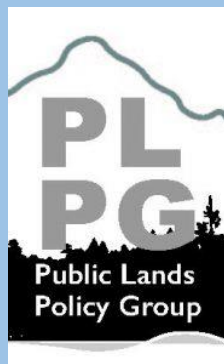
Authors: Courtney Schultz (Principal Investigator), Chad Kooistra, Lauren Miller, Michelle Ferguson



Smoke from the Decker Fire seen from Salida, CO. Photo by Chad Kooistra



Agency administrators and fire staff discuss management strategies on the Decker Fire. Photo by Chad Kooistra



**WARNER COLLEGE
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Executive Summary

The U.S. Forest Service's Risk Management Assistance (RMA) effort was established in 2017 to improve risk-informed decision making during wildfire management with advanced analytics and increased support for line officers. In Summer of 2019, we conducted a third-party review of the RMA effort. Our report on our findings¹ summarized perspectives from RMA deliverers and receivers about RMA in its first two years. In 2019 RMA provided support remotely, instead of teams visiting a fire in person, as was done in 2017-2018. We determined that a case study of a fire event receiving RMA support in 2019 would provide valuable updated insights about RMA.

For our case study, we focused on the Decker Fire that occurred in Colorado in Fall 2019. We conducted nine interviews with key decision makers and the RMA delivery team who supported the fire. RMA support was requested and provided within the first four days of ignition and then several times throughout the first six weeks of the fire. This ideally is how RMA is to be used going forward. One person explained, *"When I think back to all these different RMA fires, I like this [approach used on the Decker Fire], because it was used by multiple people at multiple times throughout the whole lifecycle of the fire. This is the ideal example of how this could work on other fires."*

Key Findings from the Decker Fire Interviews

- Decision makers took a strategy other than aggressive suppression on the Decker Fire for various reasons. Their decision to request RMA support immediately was driven by the potential complexity of the fire and familiarity with RMA among line officers.
- Line officers, agency administrators, and fire managers appreciated the early timing of RMA support because it came before major decisions were made and influenced decisions throughout the fire. They said the RMA products facilitated smooth transitions between fire management teams by efficiently providing comprehensive information to new teams. They also valued the ability to request updated and expanded information throughout the fire when needed.
- Participants noted that unexpected weather conditions and fire behavior, differing perspectives about risk management, and challenges balancing technical and experiential knowledge revealed the need to better integrate uncertainty and diverse sources of information during incidents.
- Going forward, interviewees recognized the potential for RMA products to inform post-fire impact analyses, as well as future planning and mitigation efforts. They said that realizing the full potential of RMA requires increased exposure and clarity about how and when to request support among line officers and fire staff. Better integration with existing systems and processes is also needed.
- People were optimistic about providing RMA support remotely, especially with the availability of virtual assistance and well-trained local staff to interpret information and facilitate discussions.

Conclusion

Participants emphasized that early and repeated requests for RMA support and remote assistance increased RMA utility and its influence on decision making throughout the Decker Fire. They said that increased exposure, onsite training, and pre-loading available information into existing systems would facilitate long-term integration with the management process. RMA leaders could continue to develop and highlight the potential value of RMA products during planning efforts and post-fire analyses.

¹ Schultz, C., Kooistra, C., Miller, L., & Ferguson, M. (2020). Findings from a Third-Party Assessment of the U.S. Forest Service's Risk Management Assistance Teams. Practitioner Paper Number 04. Public Lands Policy Group, Colorado State University. Fort Collins, CO.

Overview

The U.S. Forest Service's Risk Management Assistance (RMA) effort was established in 2017 to improve risk-informed decision making during wildfires by providing additional analytics and support to line officers. We completed a third-party assessment of RMA efforts that took place in 2017-2018. Our report, finalized in early Winter 2020, details the main findings from our research about the perceived value of RMA, factors that affected its implementation, broader challenges around fire management, and how RMA tools could be implemented across the country.

RMA changed during the 2019 fire season in that all assistance was provided remotely, instead of teams visiting a fire in person as was done in 2017-2018. There were also changes to the types of products or support available to line officers who requested RMA support. Through discussions with RMA leaders, we decided that a case study of a fire event receiving RMA support in 2019 would be useful for assessing the impacts of these changes and providing updated suggestions for the effort moving forward.

We selected the 2019 Decker Fire in Colorado as the focus for conducting more interviews for several reasons:

- It was a recent event and most of our interviews occurred within approximately one month after the fire was contained. This allows for thorough and accurate recollections among interviewees about their experiences with the fire and how RMA support affected the decisions made during the event.
- Line officers were familiar with RMA and understood how to request and use it. The Forest officially requested RMA on the second day when the fire was approximately 100 acres. The first products were delivered within the first four days of the fire's ignition.
- RMA support was received remotely several times during the first six weeks of the incident. This extended time period was unique and allowed analysts to provide updated information that could be integrated with decision points throughout the fire.
- The tradeoff-analysis exercise was conducted on three different occasions and was driven by local Forest staff familiar with the process and local conditions.
- There were several transitions between multiple Type 3 teams and two Type 1 teams due to the changing complexity and longer duration of the fire. RMA products provided additional information and insights to facilitate smooth transitions between teams.
- Our research team visited the Incident Command Post in Salida on the first couple of days after the first Type 1 Team assumed command. This provided firsthand insights into the primary considerations and discussions at a crucial time in the fire and where RMA fits in to the decision-making process during this type of event.
- The Decker Fire offered an ideal opportunity to provide additional and updated insights to help shape RMA moving forward, particularly for remote and repeated use of RMA on an event.

Assessment Methods

In late Fall 2019, we conducted nine interviews with local Forest Service line officers and staff, members of the fire incident management teams, and the RMA delivery team who supported the Decker Fire. We used a semi-structured interview guide to ask participants their perspectives about RMA support and products provided for the Decker Fire. Interviews lasted approximately one hour. We digitally recorded the interviews and transcribed them verbatim. We reviewed the transcripts to identify themes that corresponded with findings presented in our main report, as well as any new or emergent themes. In this report, we have

included excerpts from the Decker Fire interviews to illustrate many of the main findings. To protect the confidentiality of interviewees, we have removed any identifiers from those excerpts. Examples of the RMA products from the Decker Fire and other fires from 2017-2019 are included on the RMA website².

Decker Fire Facts

The lightning-ignited Decker Fire started on September 8, 2019 in the Sangre de Cristo Wilderness on the Rio Grande National Forest in southern Colorado. Agency Administrators (AAs) requested a Type 1 team when the fire grew and shifted toward Salida on the Pike-San Isabel National Forest. They selected a contain-and-confine strategy to manage the fire. This meant that approximately 60 percent of the fire was under a contain strategy where the fire's spread is stopped by and within specific features, constructed or natural, through active tactics. Limited actions were used on the other approximately 40 percent of the fire that was being confined by natural barriers and indirect fire line in areas with minimal threat of impacting values at risk. The fire burned until the area received a significant snow event on October 24. Approximately 8,959 acres of mostly Forest Service land burned.

Summary of Findings

Overall, many of the themes in our main RMA report were mentioned to some extent in the interviews. Here, we focus on new or emergent themes specific to the Decker Fire or when additional insights were provided about the points made in the main report.

Initial Fire Management Decisions and an Early Request for RMA Support

AAs initially selected a strategy other than aggressive suppression due to the remoteness of the fire and predictions about growth. The fire was burning in a federally designated wilderness area, there was strong likelihood that a season-ending weather event would happen in the near future, and there was limited probability that the fire would grow towards communities.

Line officers, AAs, and other agency and fire staff requested RMA support in the first two days after ignition because they recognized the potential complexity of the fire. The fire was burning in an area surrounded by dense beetle kill, abundant snags, and steep terrain. Line officers understood the potential for a complex and long-term event and wanted RMA support to help them thoroughly consider their short- and long-term options.

Previous exposure and familiarity with RMA also prompted the early request of RMA support. Line officers and several of the AAs and members of the fire staff were very familiar with the RMA process, intent, and types of support available from previous exposure to the principles on other incidents or during trainings. This familiarity prompted the decision to request RMA support during initial conversations among decision makers in the first two days of the fire.

A few members of the fire management staff who were not familiar with RMA initially expressed resistance to RMA support. However, in interviews, people said those individuals embraced it after engaging with the RMA products and process because of the clarity that emerged about the management approach. Fire managers were reluctant to participate in an initial trade-off analysis exercise that lasted several hours because they needed to connect with field staff and pay close attention to the incident's progression. However, after being exposed to the products and working through the trade-off analysis exercise, several interviewees described hearing those people saying they walked away with the clearest understanding they ever had of what the fire management team needed to do to be successful in a manner consistent with the AA's strategy.

² wfmrda.nwccg.gov/RMAT.html

Integrating RMA into Decision Making on the Decker Fire

Interviewees viewed the timing of initial RMA support on the Decker Fire as ideal because the support was available before major decisions were made. The early timing of RMA support also improved the ability to more effectively integrate RMA into other systems, processes, and decision points. Participants described the implications of timing and management decisions, saying, for example:

This fire really presented a unique opportunity. A lot of times I think the RMA team or RMA products come out maybe after a fire. This was rolled out at the beginning of the [Decker] fire. It also really helped formulate some of the WFDSS (Wildland Fire Decision Support System) decision making and objectives. It was really interesting because [the trade-off analysis] also helped facilitate WFDSS, and WFDSS helped facilitate the trade-off analysis.

The management team invested the time and energy to conduct three, different trade-off analysis exercises; participants said those discussions influenced the decision-making trajectory. People repeatedly described these exercises as highly beneficial and directly influencing key decisions. For instance, AAs requested a Type 1 Incident Management Team (IMT) based on the complexities of the fire and the level of support needed as identified in those discussions. They also had more time for these in-depth discussions because the fire was still relatively calm and being monitored. Those discussions provided a structured space and format to consider values at risk and different fire management strategies. For example, participants told us:

A lot of this stuff that we're talking about is about timing. They had the right people with the trade-off analysis tool, and they were able to get everybody together and have a really robust conversation about the strategy of the fire.

We thought that would be useful, and it was, for a sit down with the Type 3 team that we ordered and the agency administrators to really home in on what the values at risk were ... They changed their decision during the course of the risk assessment and the trade-off analysis. They all had a mental outcome in mind and then when they went through the risk assessment and the trade-off analysis that actually changed.

Interviewees said the trade-off analysis exercises brought people together to talk about strategy and had value in “getting everybody on the same page.” The discussions brought to the forefront considerations about balancing risk to firefighters, the public, and property compared with other perspectives such as wilderness values and ecological benefits of fire. Participants told us that those discussions led to more efficient transitions between management teams throughout the fire because teams did not need to engage in that entire process to get the necessary information. One member of an IMT stated, *[The trade-off analysis exercise] was fantastic. Because of the stuff that [an agency staff member] preloaded...instead of us getting up to speed in the first three to four days, we [were] up to speed in the first day or two.”*

Participants said the trade-off analysis exercises also created a structured opportunity to consider perspectives across different agencies and jurisdictions. Decision makers discussed and prioritized values at risk on the two national forests, Bureau of Land Management (BLM) districts, and other lands and aligned the strategic approach accordingly. One of the AAs said that the Management Direction Alignment Table helped the team consider their options across the different management units, while staying within the guidance of management plans. Interviewees consistently said they valued having members from nearby BLM districts there to participate. BLM partners identified important values at risk, such as impacts to sage grouse habitat, cultural considerations, and how road closures would affect the hunting community during an important time for them. Recognizing these issues helped the team formulate decisions and consistently communicate the rationale for these decisions to the public and various stakeholder groups.

People said that having local agency staff facilitate the trade-off analysis exercises led to efficient and relevant discussions and outcomes. Since RMA no longer includes in-person teams who can interpret information and facilitate the trade-off analysis exercise, participants recognized that designating a local expert to facilitate the process was ideal. Staff familiar with RMA products and risk-informed decision-making principles systematically guided the team through the mechanics of the worksheet, such as when and how to weigh different values and assign categories of risk. This staff person, the main facilitator, kept a broader perspective and also helped AAs consider aspects they had not yet considered.

Most interviewees mentioned the value of other RMA products, including the Snag Hazard, Ground Evacuation, Potential Control Locations, and Suppression Difficulty Index maps. The Resource Timeline and Incident Timeline were especially helpful, interviewees said, for justifying costs and telling the story about the decision-making process. The suite of RMA information was included in the packet of information provided to incoming teams and helped facilitate transitions between management teams. RMA also provided the analytics and visuals to help communicate about the fire and management decisions with the public, political representatives, and agency administrators.

AAs, line officers, and RMA deliverers said that repeated requests for RMA support throughout the incident improved the ability to integrate RMA products into key decisions. Decision makers repeatedly requested updated RMA products as fire conditions changed so they had the most up-to-date and relevant information. At times, RMA deliverers also proactively provided additional information or suggested the types of information that might be helpful. This type of back-and-forth integration worked well for receivers and deliverers.

Although RMA was well-received overall on the Decker Fire, several interviewees discussed the need to more carefully consider uncertainty when using technical information or predictions. Some of the initial fire staff questioned the decision to not immediately pursue full suppression based on the amount of fuels present, the steep terrain in adjacent areas, uncertainty in the weather conditions, and concerns about model reliability. For instance, they felt that the decision makers could have more carefully considered the chance that a season-ending event would be delayed or that winds would shift towards a community. Someone also felt that active suppression was not undertaken in part due to the long distances to definitive care as identified in a set of RMA products. They questioned this rationale because attacking the fire more aggressively would have shortened the duration of the fire and reduced resources required to manage it. They said that gut feelings and past experiences among some fire staff would have led them to pursue full suppression based on the factors mentioned above.

There was general agreement among participants that the RMA information and process is useful. People emphasized that using information from a diversity of sources and having experienced line officers is key to balancing technical information with intuition, prioritizing values at risk, and carefully considering potential uncertainties when making management decisions.

Insights from the Decker Fire about the Future of RMA

Participants said that RMA products from the Decker Fire have utility after the fire for assessing fire impacts and to assist future planning efforts. Several interviewees discussed how RMA risk assessment information could help the post-fire Burned Area Emergency Response (BAER) teams by informing their decisions of where to focus their efforts. Someone also discussed plans to use RMA products provided during the Decker Fire in future planning meetings when considering balancing fuels mitigation and goals to allow for fire to promote resource benefits. One person said that RMA products “*can be utilized in prescribed fire planning, treatment, public outreach, and communication.*” Keeping these considerations in mind could inform how RMA approaches are communicated and embraced across the agency in the future.

Many interviewees mentioned a need to increase knowledge about RMA, noting that the process for requesting RMA support, including having a summary of available RMA products, is still not something many line officers and fire staff know about yet. The Decker Fire was the first

exposure to RMA for some interviewees, and they said they intended to take it back to their teams or forests. People said, for example:

I brought [the trade-off analysis exercise] home with me to implement here on [a different forest] because I think it's a great way to weigh options. That was my first experience with the trade-off analysis, and I thought it was some outstanding work that was really applicable nationally.

I think this is something that needs to get out, you know, how to access it. What we need to do is just make sure we get that information out to everybody. I'll be talking about this wherever I go.

Line officers, AAs, and fire managers said that RMA should be better integrated with existing decision-making systems and products so it can be used more efficiently and more broadly. Interviewees had specific suggestions for how RMA support might be integrated into WFDSS. Several people said they could only upload the first page of the trade-off analysis exercise spreadsheet in WFDSS but attaching the entire output would help illustrate how that exercise influenced a decision. Others wanted the option to request RMA products and support directly through WFDSS or other easily accessible interfaces or websites. They also said that developing certain RMA products in advance, such as information about snag hazards, and having that information readily available before the fire season, would allow it to be immediately available when a fire starts or to be integrated other planning opportunities such as Potential Operational Delineation (PODs). One person also suggested that RMA support should include Crown Fire Potential maps and information about fire behavior (i.e., fire flow maps). Others said:

I [suggest] having [RMA products] closer in WFDSS. Or another site [where] you can just submit the order for the [RMA] products. I'm not sure why all this stuff couldn't be preloaded...so we have these layers for other information here already loaded into WFDSS for local fires.

The game changer...[would be] if those RMA products are integrated into WFDSS. So that when you bring in a fire, you have a point of ignition, you drop it in, [and] it starts to build the RMA products.

The goal would be to have all this stuff accessible in some type of system upfront. That would be the ideal. We would have PCLs, SDI, snag hazards, all the timelines, all into the next generation of WFDSS where it's all preloaded and they don't need to call [RMA] at all.

People valued the remote assistance aspect of RMA support on the Decker Fire because it made it possible for support to be provided very quickly after being requested and at multiple points over an extended period. Respondents appreciated the ability for RMA support to be provided at the beginning of the incident and over a six-week period. In the past, immediate responses were not be feasible with in-person support teams because of travel time and other logistics. Teams also typically provided in-person support for approximately a week, making it difficult to integrate RMA throughout the duration of longer events. Without face-to-face interactions between those delivering and receiving RMA support, others mentioned that the ability to contact someone to discuss the products or other questions that come up is a necessary aspect of effectively providing remote assistance. Interviewees also said it is helpful to have a local staff person who is familiar with RMA to provide interpretation of the products and guidance through key processes. For example, the TOA exercise was used minimally on other fires in 2019, which was likely due to the remote nature of RMA support in 2019 and not having a local staff member trained with the products and process like there was on the Decker Fire.

Conclusion

This Decker Fire case study provides an updated perspective about RMA support during the 2019 fire season. Several key aspects of RMA support on the Decker Fire illustrate a promising future for integrating RMA into the fire management decision-making process. We found that early and repeated integration of RMA support increases its potential to effectively influence decision making throughout the course of a fire. We also found further evidence of the need to have trained local staff members across the country who are familiar with RMA products and processes, and who can help facilitate the process and interpret RMA information in real time throughout the course of the fire. Increased exposure to the RMA process and products throughout the agency and among other agencies and entities will be important. People said better integration with existing systems is necessary and would support expanded use of RMA approaches.

Key next steps for RMA leaders will be to continue sharing the RMA process and tools widely, including training people locally to use RMA tools and processes when needed. Another next step will be integrating RMA support into existing systems, such as WFDSS, so that line officers can request the support they need immediately. Better integration will also help communicate and describe the decision-making process to a wide audience during and after a fire. Leaders should systematically determine which RMA products or data sets can be developed before a fire and pre-loaded into systems like WFDSS, so they are readily available.

Another opportunity is to consider the utility of RMA products beyond an incident. The information provided by RMA can be integral to post-fire efforts and longer-term planning and mitigation efforts. For example, integrating RMA products such as the Snag Hazard and Potential Control Locations maps with PODs mapping efforts will lead to more comprehensive planning. Carefully considering and articulating the wider potential benefits and uses of RMA products can situate RMA tools and approaches as a prominent component of the planning and fire management decision-making processes across the agency.



Agency administrators, fire staff, and others provide updates and more information about the Decker Fire during a public meeting in October 2019. Photo by Chad Kooistra