

Pivoting During the Pandemic:

How COVID-19 and the 2020 Wildland Fire Year Created a Novel Learning Opportunity for USDA Forest Service Wildland Fire Management

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Abstract

The USDA Forest Service anticipated that COVID-19 outbreaks among fire management personnel would potentially impact the agency's ability to maintain the readiness of the wildland fire system and to respond to large complex wildfires across the country. In response, the agency implemented emergency action plans across the United States in March 2020 to reduce spread of COVID-19. When pandemic conditions were first emerging and information about how to mitigate risk of the virus was highly uncertain, fire personnel were learning to adapt their everyday work practices and to navigate an overwhelming amount of conflicting information regarding virus mitigation, transmission, and spread. Forest Service field personnel provided hundreds of everyday lessons learned and corresponding suggested tactics across the 194 focus groups administered during this project. To organize the large amount of data and facilitate future application of on-the-ground lessons, we situate each lesson within one of three overarching categories: communication, organizational culture, and organizational learning. We anticipate that decision uncertainty arising from the pandemic such as tensions between policies and procedures, decision space, and personal life will have wide and lasting impacts for wildland firefighters at all levels.

Keywords: fire management, pandemic, uncertainty, risk, organizational learning, organizational culture, communication, focus groups

Cover: The South Zone Gifford Pinchot Fire crew at the 2020 annual Preparedness Review. All levels of fire management gather annually to show proficiency in wildland firefighting preparedness, operations, safety, and in 2020, COVID-19 mitigation strategies. A portion of the proceeds of each mask worn in this photo was donated to the Wildland Firefighter Foundation, which provides logistical support to wildland firefighters and their families in times of need. USDA Forest Service photo by Gifford Pinchot National Forest.

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Fire crews sent from Alaska to assist with the 2020 fire suppression efforts in the lower 48 States arrive at NIFC. U.S. Department of Interior photo by Neal Herbert.

Foreword

COVID-19—five letters, a hyphen, and two numbers—represents an event that affected our world, our country, our organization, and how we responded to wildland fire. This General Technical Report (GTR) is about one of the many responses that the U.S. Forest Service undertook to adapt its way through a set of extraordinary challenges. Specifically, it describes one of the ways in which the Forest Service answered the question, “How do we communicate, understand, adapt, and respond rapidly during an exceptional fire season and a pandemic?”

Adapting and changing are in the DNA of the Forest Service, nowhere more so than in the wildland fire community. Initially, some assumed COVID-19 was just “another” risk to be mitigated among the myriad of risks that make wildland fire a study in complexity. Others approached our response from the perspective that COVID-19 was the actual event and that wildfires were going to be an incident within an incident that needed to be managed with COVID-19 mitigations as the primary driver of operational tempo. There were many other voices with a wide range of perspectives, but what became clear early on was that this was unexplored organizational territory and business-as-usual was not going to work.

That’s where this project emerged: from the need to understand how this novel situation was affecting operations and to generate that understanding in as close to real time as possible. To accomplish this, we built an ad hoc team with an adaptive, systematic process that was positioned to tap into the operational realities occurring in each region of the wildland fire community. The bones of this system are nine focus groups conducted weekly with as broad a representative group of fire responders as could be found. At the other end of the information loop was a group of senior leaders who were willing to hear and listen to weekly feedback of what was working, and even more importantly, what was not working.

This GTR gives an excellent review of what I consider to be a truly remarkable response, and it provides a structure for how complexity can be described in real time to supply leadership with strong, clear intelligence from the field. In the end, the true power of a response like this rests in the security that those in the field must have to speak their mind, and the willingness that leaders must have to hear hard truths, accept that they may be wrong, and be open to the need for rapid change.

What is also becoming clear is that COVID-19 and wildland fire continue to add exceptional stress to our operations; and unfortunately, additional stressors are being placed on the agency. We will need to become experts at this adaptive, real-time management of complexities as we venture further into the 21st century. I hope this GTR will stimulate greatly needed dialogue on how to take our organizational processes of adaption to the next level.

—Jim Gumm
Director,
Innovation and Organizational Learning,
USDA FOREST SERVICE

Executive Summary

We will stop, think, talk and act more now than ever before. This will be challenging during the 2020 fire year, but we will evolve, learn, and adapt as the situation changes. For example, we need to hear what works and what doesn't directly from firefighters, and we will be setting up multiple ways to get that feedback.

—Victoria Christiansen,
Chief of the U.S. Forest Service,
April 2020 (Christiansen 2020)

On March 13, 2020, the President of the United States declared COVID-19 a national emergency, and government agencies including the Forest Service, an agency of the U.S. Department of Agriculture, implemented emergency action plans across the country to reduce spread of the virus. The threat of a COVID-19 outbreak among fire personnel could impact the agency's ability to maintain the readiness of the wildland fire system and its ability to respond to large complex wildfires across the country. In March 2020, information about COVID-19 and how to mitigate risk of the virus was highly uncertain and each day fire personnel were learning to adapt their everyday work practices and to navigate an overwhelming amount of conflicting information regarding COVID-19 mitigation, transmission, and spread.

In order to collect information and learn in real time about effective COVID-19 mitigation and strategies, senior fire leaders in the Forest Service and an ad hoc Enterprise Risk Management (ERM) team¹ (Thompson et al. 2022) sought expertise from the Forest Service's Rocky Mountain Research Station (RMRS) Innovation and Organizational Learning (IOL) Research Development and Applications program². The IOL team's experience in collecting information for wildland fire learning reviews, along with its deep connections to field-level fire employees across the agency, created an opportunity to conduct focus groups with an occupationally diverse group of fire personnel from all nine Forest Service regional administrative areas.

The focus group process revealed on-the-ground lessons learned and suggested tactics for working through the challenges of wildfire management under COVID-19. From March 23 through October 30, 2020, IOL conducted 194 focus groups while providing

1 For more information on the government interagency Risk Management Assistance [RMA] team, visit: <https://wfm-rda.nwcg.gov/rma>.

2 For more information on the IOL Research Development and Applications program, visit: <https://www.fs.usda.gov/rmrs/groups/human-performance-innovation-and-organizational-learning>.

weekly reports to Forest Service senior fire leaders and ERM. Results from the focus groups were used to inform guidance on issues such as COVID-19 testing, quarantine, and housing. Moreover, focus groups served as a space for ongoing engagement and learning between participants during periods of uncertainty.

Fire personnel in the focus groups shared hundreds of lessons learned. This report synthesizes into broader learning categories the everyday lessons learned and the corresponding tactics that the participants suggested in the focus groups. To organize the large amount of data and facilitate future application of on-the-ground lessons, our analysis situates lessons within three overarching categories:

- Communication—message quality and information flow, communication technology and tools;
- Organizational culture—leadership, employee mental health and wellness, and employee work and staffing; and
- Organizational learning—learning about COVID-19 safety, and reflections on learning in real time.

In this report, we provide in-depth discussion and long-term consideration for each of the three (Communication, Organizational Culture, and Organizational Learning).

We anticipate that decision uncertainty arising from the pandemic will have wide and lasting impacts for wildland firefighters at all levels. We argue that the pandemic introduced new uncertainties and exacerbated existing stressors for wildland firefighters at intersections of the following:

- Policies and procedures—tension between the Centers for Disease Control and Prevention (CDC) guidance and fire operations;
- Decision space—new administrative territory for decision making; and
- Personal life—intensified overlap of personal life with work life.

The intersections between these three broad situations created uncertainties and opportunities that are likely to shape wildland fire operations well into the future.

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Introduction

The purpose of this General Technical Report (GTR) is to provide a macro-level analysis of focus groups administered by the Forest Service, U.S. Department of Agriculture, during the 2020 wildland fire year under COVID-19. From March 23, 2020 through October 20, 2020, the Rocky Mountain Research Station's Innovation and Organizational Learning (IOL) program conducted 194 focus group sessions with Forest Service wildland fire employees across 9 Forest Service administrative regions and from diverse fire management occupations. This report documents and tells the story of the process of organizing, analyzing, and writing weekly reports based on information collected from focus group participants during the 2020 wildland fire year. In addition, broader lessons learned and considerations for future applications during a crisis are identified. Throughout the preparation and for most of the 2020 wildland fire year, decision making about wildland fire management under COVID-19 ebbed and flowed within a context of uncertainty. The findings from this report reveal the complexities of providing clear and concise policy, guidance, and information management during a national crisis in which senior leaders and field-level employees had limited information. The use of doctrine—a policy that aligns with an adaptation safety paradigm because it formally allows firefighters to bend and adjust safety rules according to their judgment—provided room to innovate. However, the doctrinal stance was also subject to uncertainty when guidance was limited or shifted along with new information about COVID-19.

Beginning in the mid-1990s, Forest Service wildland fire management began to incorporate social science approaches into its examination of safety and risk management (Flores and Haire 2021). More specifically, the agency began adopting the theoretical framework and principles of a high reliability organization (HRO) (Putnam 1995). High Reliability Organizations operate in a social environment where the unexpected is common, small events make a difference, failure is a strong possibility, and lives are on the line (Weick and Sutcliffe 2007). Within these complex organizations, Weick and Sutcliffe (2007) suggest building a mindful organizational culture, wherein normal, everyday work practices are regularly examined in order to develop internal awareness of organizational processes that lead to simplification. Ultimately, the goal of the Forest Service is to become a learning organization (Garvin et al. 2008) in which explicit protocols are put into place to capture information on how decisions are made, and then this decision-making information is used to reflect on organizational outcomes. To capture, make sense of, and reflect on the challenges of the 2020 wildland fire year under COVID-19, IOL developed an applied process for learning during the pandemic. What emerged is a deeper understanding of the importance of the vertical and horizontal organizational communication practices that govern the exchange of information and learning among senior leaders and field-level employees.

The Challenge of COVID-19 and Wildland Fire Management

In 2020, COVID-19 impacted every aspect of wildland fire management. Common everyday work practices in both the normal work environment and in the personal lives of Forest Service employees required adjustments as the agency was tested with uncertainty at all organizational levels. Employees reported that they grappled with those uncertainties without clear and concise direction for decision making in the field. These Forest Service employees reported feeling overwhelmed with the massive amount of information about COVID-19 from different leaders and subject matter experts. Safety messages and emerging lessons learned often were inconsistent—they came from every corner of the organization and were communicated through different types of announcements on different days of the week. The Forest Service gradually incorporated COVID-19 mitigation and response practices into normal work, and this information overload decreased with time.

Although Forest Service wildland fire management has a well-developed culture of doctrine and of using risk assessments in decision making based on High Reliability Organization (HRO) principles (Jahn 2019), COVID-19 presented a very different type of



Members of the Rifle Peak crew from Nevada line up for a temperature check at the Slink Fire in Colorado, September 2020. NIFC photo by Charity Parks.

risk for the agency to consider. Unlike with fire-related risk, senior leaders and other employees in the agency could not draw from decades of experience to inform their decisions about the mitigation of hazards that the pandemic presented. The risk of infection was largely unseen and was difficult to quantify and place into a standard decision-making model. While use of doctrine to guide decision making was highly encouraged, employees reported a lack of clear direction and mixed messages from leaders—who, like other employees, had limited information or knowledge of COVID-19—and they felt that decision making was pushed down to field-level managers.

Forest Service wildland fire managers adapted to several challenges presented by COVID-19. Their lessons learned include a multitude of operational innovations, some specific to COVID-19 and others that have continued beyond the pandemic. A summary of these operational lessons learned is included in the section “Lessons Learned, Suggested Tactics, and Considerations for Future Application.” A more subtle but no less important organizational challenge in 2020 was that of maintaining employee trust in the organization. Trust is based on the tacit understanding—an implicit contract—that the organization will support its employees in minimizing hazards and in addressing the consequences of those hazards when things go wrong. Employees reported that they did not always feel that the obligations of that implicit contract were being fulfilled.

The 2020 Forest Service Chief’s Letter of Intent for wildland fire (Christiansen 2020) provided broad planning guidance to the firefighting community on objectives for the fire year. The letter clearly recognized that the 2020 fire year would present unusual challenges, set the tone for how to approach these challenges, and defined overall measures of success. Importantly, the letter emphasized the necessity of receiving timely feedback from field-level employees in the organization.

We need to hear what works and what doesn’t directly from firefighters, and we will be setting up multiple ways to get that feedback.

—Victoria Christiansen,
Chief of the U.S. Forest Service,
April 2020 (Christiansen 2020)

The nationwide focus groups served as a mechanism to provide real-time information for senior leaders to hear from the field about what was working and what was not. As planned, the focus groups provided field-level employees a chance to highlight challenges and innovations from the field. With serendipitous effect, however, the focus groups also became a mechanism for collective problem-solving and learning among field personnel during a dynamic, challenging time.

What Did the 2020 Wildland Fire Year Reveal?

The 2020 fire year tested Forest Service wildland fire management in many ways. It served as a complex experiment to assess strengths and weaknesses and to better understand the capacities that the Forest Service will need as the agency progresses into a world of rapid social, technical, and ecological changes. The section “An Applied Process for Learning During the COVID-19 Pandemic” describes the IOL focus group protocol. The IOL team used focus groups with Forest Service employees across the wildland fire system as a platform to collect real-time information on the challenges that COVID-19 posed in the everyday work environment of wildland fire personnel, and the multiple ways in which employees were adapting, innovating, and mitigating the risk of COVID-19 in the field. The following section, “Lessons Learned, Suggested Tactics, and Considerations for Future Application,” discusses common themes and lessons identified by focus group participants. To make sense of the large amount of qualitative data emerging from the weekly focus groups, we organized lessons learned from focus group participants into three overarching categories: Communication, Organizational Culture, and Organizational Learning. We also included broader discussions and long-term considerations. “Managing Broad and Lingering Uncertainties of COVID-19” considers how focus group findings about COVID-19 challenges and solutions may have wide-reaching and long-term impacts to the Forest Service wildland firefighting profession. The section builds upon lessons learned and describes how COVID-19 introduced new dimensions of job-related uncertainty in the 2020 wildland firefighting year. Specifically, we propose that policy, decision space, and personal life merged to introduce new dimensions of uncertainty that impacted decision making for individuals at every level of the organization.

This report concludes with a brief summary of what Forest Service wildland fire employees learned using the focus group process and provides the reader with the major takeaways from this report.

An Applied Process for Learning During the COVID-19 Pandemic

Wildland fire management is an extraordinary work environment, highly influenced by environmental, social, economic, cultural, political, and psychological conditions (Putnam 1995). To manage this complexity, Forest Service wildland fire managers have adopted HRO practices, one of which is to examine organizational practices in the everyday work environment in order to build a learning culture (Weick and Sutcliffe 2007). The IOL office focuses a critical lens on learning and how the Forest Service wildland fire community can learn from significant events. The IOL team is tasked with capturing, describing, and making sense of the complexities that unfold during fire operations and with turning the outcomes into learning opportunities for improving the interagency fire community. The primary focus is on learning from unintended outcomes.

Beginning in March 2020, the COVID-19 pandemic changed the meaning of “normal” work for IOL (fig. 1). The pandemic was bound to complicate wildland fire management during what promised to be a difficult fire year, and the Forest Service’s ERM team (Thompson et al. 2022) and senior leaders in the agency needed information from the field to help inform COVID-19 risk mitigation strategies. Given the uncertainty associated with a novel and highly contagious virus, strategists and leaders wanted data about field conditions, changing situations, and the impacts of executive direction, both intended and unintended. The ERM team suggested recruiting external experts in risk communication, who recommended activating focus groups to share information, develop peer-to-peer knowledge transfer, and provide feedback of lessons learned in the field.

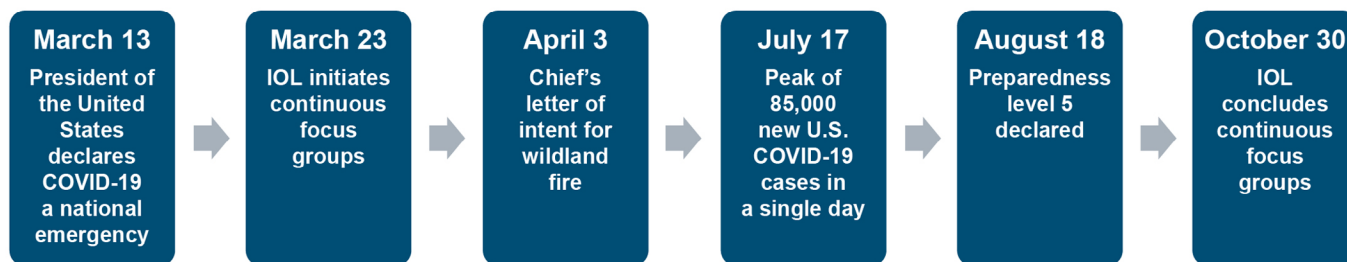


Figure 1—Sequence of significant events during the 2020 fire year.

Various Levels of Learning

To provide continuous communication from the field in real time, IOL built on its experience in collecting information to produce learning reviews and the wildland fire meta-review (see [IOL publications](#)). Continuous communication can flow in multiple ways and with varying levels of reliability, depending on time and available resources. To meet the demand, IOL developed an applied process for communication and

learning in real time. The process includes information collection, data analysis and sense-making (synthesis), and report writing. Reliability of results ranges from low (with limited time) to high (with unlimited time and resources).

To inform ERM and senior leaders on perspectives from the field during the 2020 fire year, IOL structured the reliability of results into four categories: management grade, high management grade, acceptable grade research, and research grade.

Management grade (MG) is the simplest form of data collection to inform decision making. The director of IOL asked an IOL subject matter expert for an opinion based on the information collected and the director made a decision. MG was quick and inexpensive; depending on level of expertise and the complexity of the issue, the outcomes were often positive. However, MG was low in reliability because data were limited.

High management grade (HMG) data collection involves IOL collecting information, conducting a brief analysis, and writing a rough draft of the results. In this project, IOL increased the reliability of the information by conducting 9 focus groups (with 8 to 15 participants), and IOL employees functioned as facilitators, note takers, reviewers, and writers who worked to develop a weekly HMG document. HMG documents were provided within very short timeframes, and data collection and communication were as close to real time as possible.

Acceptable research grade (ARG) data collection and analysis were conducted by the IOL sensemaking team, a group of fully trained social scientists who were given more time than the HMG group but significantly less time than a normal research project would entail. This group either confirmed or refuted HMG findings and also searched for “hidden gems” of information and learning through a deeper analysis. The sense-making team also teased out the issues unheard or voices missed during earlier analysis. Findings were close enough to real time to offer valuable lessons learned for ongoing situational awareness.

Research grade (RG) is the gold standard for learning to inform decision making in the long term and entails data collection, analysis, and writing that requires significant time and resources. The benefits of RG are extremely diverse, represent the deep thought invested in an issue, and include rigorous learning objectives. Though not infallible, RG has the highest reliability possible in a complex environment. However, RG entails significant financial cost, as well as long timeframes for peer review and academic publication. This GTR along with future publications based on the data collected during this project are examples of RG.

During the 2020 fire year, IOL determined that reliable information was often needed beyond the MG level. However, limited time restricted the amount of analysis and review available for a full-RG level of reliability in weekly reports. To increase the level of reliability and learning, additional research social scientists were invited to provide

ongoing, long-term data analysis at the RG level. Though not carried out during the 2020 fire year, RG analysis and writing are now being applied to organizational learning and communication to provide lessons learned that may be used to inform decision making during a future crisis.

Focus Groups

To support each of the four categories (MG, HMG, ARG, and RG) of learning and communication, IOL initiated ongoing focus groups, which were active through October 2020. Members of the IOL team reached out to a network of lower-level and mid-level Forest Service employees who work in wildland fire management, deliberately seeking participants who represented wildland fire personnel from each Forest Service region and from a variety of occupations. Though broadly representative across occupational roles, the focus groups were not a sample of all Forest Service employees working in wildland fire. Notably, a later review indicated that no single occupational perspective was underrepresented or overrepresented.

The focus group is a social science method for collecting information from a subset of a population (Krueger and Casey 2009). The IOL team adopted the focus group approach to collect data with higher reliability than MG. Focus groups were beneficial in collecting HMG data for several reasons. First, focus groups are used to gather in-depth knowledge about a particular “focus,” problem, or issue. In this endeavor, the focus groups included in-depth conversations about new challenges that COVID-19 posed in the everyday work environment of wildland fire management. Second, focus group participants can be recruited to represent either uniform or diverse perspectives. In this case, participants represented diverse experiences, occupational roles, and management positions within the Forest Service’s fire community. The variety of organizational positions exposed participants to different perspectives and expanded their understanding of how other employees were adapting to new working conditions due to the pandemic. In addition, focus group participants express multiple perspectives and a nuanced understanding of a topic or issue, and they typically have multifaceted responses to a particular issue. Because the focus group is an interactive conversation, participants also cue one another to create additional or enhanced insights. In this case, focus groups provided rich feedback to Risk Management Assistance (RMA) members and senior agency leaders, helping them understand how COVID-19 challenges—and ways of mitigating the associated risks—unfolded in the field and how leaders might incorporate the knowledge into their executive direction. Further, focus groups often benefit the participants themselves. In this case, the focused conversations let participants voice their beliefs and concerns in a safe setting among colleagues and share their respective lessons from the field with one another. They shared their experiences without a direct supervisor present, empowering them to engage in candid, meaningful conversations.

Focus groups are typically conducted in person. In this case, however, physical distancing guidelines and telework requirements called for IOL to conduct the focus groups virtually using the Microsoft® Teams platform on the Forest Service network. The importance of virtual meeting applications cannot be overstated. Recent advances in video telecommunications have greatly improved the capacity for networking and organizing across geographic space.

Protocol for High Management Grade Data Collection

In March 2020, IOL decided to conduct one focus group for each Forest Service region. Within 10 days, IOL assembled a team of focus group facilitators, recruited participants from across the country, designed focus group questions, conducted nine regional focus groups, analyzed the data, and delivered a written report to RMA.

Initially, RMA asked IOL to find information on “what incentives would encourage the field to engage in COVID-19 mitigation strategies during the 2020 wildland fire year?” Although mitigation strategies were indeed a concern, the open-ended nature of the focus groups allowed participants to make other observations about the pressures of dealing with the pandemic. Their insights exposed overlooked and emerging issues, pinch points, and weaknesses in Forest Service wildland fire management.

Following the first set of nine focus group reports, IOL gathered all suggestions from field personnel and prioritized them using the Eisenhower Decision Matrix (fig. 2). The matrix helped IOL separate immediate from long-term challenges (Krogerus and Tschäppeler 2012), providing a template for presenting focus group data to RMA.

RMA found the focus group information extremely valuable for learning in real time during the pandemic, so IOL was asked to continue the HMG focus group process throughout the 2020 fire year. To develop a sustainable and ongoing focus group process, IOL designed a focus group protocol and implemented a detailed production schedule (Appendix). The schedule outlined roles, processes, and timeframes for convening nine weekly focus groups, conducting analysis, and writing a consolidated weekly internal agency report.

The focus group facilitators sent email invitations and reminders to their respective groups and led focus group sessions. A separate note taker initiated the Microsoft Teams recording, used a template to take notes on the session, conducted initial analysis of the notes, and posted a summary for the writer–editor. Each regional focus group session



Figure 2—The Eisenhower Decision Matrix.

was scheduled for the same time each week. To the extent possible, facilitators and note takers remained with the same groups throughout the year. Incoming IOL temporary assignment detailers who became facilitators spent at least one session as an observer before taking on the role of focus group facilitator.

Weekly focus group questions were based on new information, guidance, and policies related to COVID-19 risk mitigation and wildland fire management. In addition, participants were asked questions about items posted on the Wildland Fire Lessons Learned Center website throughout the year, and about COVID-19 related incidents that were happening on fires.

Regional Forester and Subject Matter Expert Interviews

To support HMG communication, data collection, and real-time learning, IOL scheduled individual interviews with the Forest Service's nine regional foresters, some of whom were interviewed multiple times. Each regional forester received the weekly report from the focus groups. The IOL director and assistant director conducted the interviews with regional foresters.

The IOL interviewers asked regional foresters to comment on the weekly reports. They also inquired specifically about recent challenges, unaddressed issues, innovations, and learning opportunities from peers. In addition, interviewers asked what regional foresters wanted employees in the field to know, and they raised open-ended questions about the wildland fire community and COVID-19.

Although the interviews offered a higher-level perspective, regional foresters were also dealing with many of the same issues as employees in the field: uncertainty, communication challenges, challenges with changes in health safety guidance and direction, and not having time to pause and think more deeply about issues. Identifying regional forester challenges in real time furnished data for comparing how events were unfolding at the level of senior leadership with how they were affecting the field. For example, it helped to determine how guidance was being interpreted and if and how it was useful. These interviews also helped in identifying gaps in perspectives and understanding of issues, priorities, and doctrine versus direction.

Subject matter expert interviews were conducted with incident commanders, medical doctors, and specialists in human resources, critical incident stress management, and risk management. The interviews shed light on how specialized groups in the agency were thinking about wildland fire management in the context of COVID-19. In addition, the subject matter experts helped answer specific questions from the field, which allowed focus group facilitators to loop information back to focus group participants.

Even as subject matter experts were advising senior decision makers, focus group facilitators were using their advice to develop weekly focus group questions. For example,

interviews with human resources specialists and medical doctors helped in formulating questions about COVID-19 testing guidance and compensation. Interviews with specialists in critical incident stress management and risk management helped IOL develop questions about how additional fire management resources were or were not being used.

High Management Grade Data Processing and Report Writing

To make sense of the large amount of data collected each week, facilitators, note takers, and writer–editors identified the most pressing challenges and concerns from focus group participants. Focus group facilitators and note takers adopted a coding scheme to filter information from focus group participants into four categories (Richards 2009): (1) specialized concerns, (2) suggested actions, (3) lessons learned, and (4) operational innovations.

Facilitators, note takers, and writer–editors worked collaboratively to identify creative topics in the focus groups, separating notes into complaints, legitimate concerns, and actual innovations. After sorting the notes, more time was spent thinking and writing about creative thoughts than on complaints in developing the weekly reports. Writer–editors also created headers, which outlined the report and became the stable template for the following weekly internal reports.

Throughout the process of analysis, writing, and editing, IOL and the sensemaking team worked diligently to stay true to the story and language of the participants, neither judging, correcting, nor editing them. Instead, when IOL team members wanted to provide their own reflections, that is, thoughts that were not directly expressed by focus group participants, IOL created separate reflection boxes in the weekly reports.

Acceptable Research Grade Data Analysis and Report Writing

A sensemaking team of social science researchers external to IOL conducted additional data analysis of the weekly focus groups, comparing their own independent findings with themes from the IOL weekly report. This ARG process of data analysis and report writing took place 1 week after production of weekly reports (Appendix).

The sensemaking team met on a consistent weekly basis to validate report themes and findings, ensure reliability across the data, and explore broader systemic and cultural issues for longer-term learning (Richards 2009). The sensemaking team consisted of doctoral-level social scientists with experience in risk management, communication, and qualitative data analysis.

Individual team members were assigned to specific focus groups. Each week, they read the full notes, listened to and analyzed the recordings of focus group sessions, and compared their findings to the IOL report. The sensemaking team discussed common

threads, identified innovations and outstanding questions, and delivered its own weekly report to the IOL director. The team also consulted with the Forest Service's Washington Office and RMA leadership to assist in developing greater situational awareness and to develop strategies to improve upon ongoing communication techniques.

Research Grade Data Analysis and Report Writing

Research grade data analysis and report writing began immediately after completion of the focus group process on October 30, 2020. The sensemaking team produced a final internal Forest Service report titled Learning From Crisis: Making Sense of COVID-19 During Fire Year 2020. In the report, the sensemaking team identified common themes and lessons learned that are consistent with this report. Hence, this GTR is a continuation of RG data analysis and report writing. The following two sections discuss the main findings from this applied process for learning during the COVID-19 pandemic, and provide an analysis of how broad uncertainties were managed during the 2020 fire year.

Lessons Learned, Suggested Tactics, and Long-term Considerations for Future Application

This section presents sensemaking of broad lessons that focus group participants identified during the 2020 wildland fire year. Understanding and remedying existing issues in the organization of work and the management of personnel are ongoing efforts in an HRO. The COVID-19 crisis magnified many of those issues, making them more obvious and immediate but also more complicated to address. Like many crises, COVID-19 also imposed new obstacles while simultaneously sparking new opportunities in wildland firefighting. This section reflects the multitude of suggestions offered by the focus group participants. Not all ideas from focus group participants could be fully represented in this report, so ideas are synthesized into key topics.

The emerging topics in this chapter are organized into three overarching categories: Communication, Organizational Culture, and Organizational Learning. We recognize that these terms mean different things to different people, and they overlap considerably. For the purposes of this GTR, the categories provide a way to present the insights from the large amount of data that the focus group participants delivered.

There are three categories of continuous focus group themes:

COMMUNICATION

- Message quality and information flow
- Communication technologies and tools

ORGANIZATIONAL CULTURE

- Leadership
- Employee mental health and wellness
- Employee work and staffing

ORGANIZATIONAL LEARNING

- Learning about COVID-19 safety
- Reflections on learning in real time

Each theme contains both lessons and corresponding suggested tactics—all of which were identified by the focus group participants. Within the Communication category, there are 7 broad lessons learned and 22 corresponding suggested tactics from field

personnel. Eight lessons learned and 23 corresponding suggested tactics are provided within the Organizational Culture category, and 7 broad lessons learned emerged in the Organizational Learning category, with 21 corresponding suggested tactics. Readers searching for more specific lessons learned identified in real time are encouraged to contact [IOL](#) to access internal weekly reports that were distributed during the 2020 wildland fire year. For each overarching category (Communication, Organizational Culture, and Organizational Learning) we offer a higher-level discussion and suggest long-term considerations. There are seven long-term considerations that are intended to improve organizational communication, culture, and learning in the Forest Service wildland fire community but which may also be applied across the entire agency and possibly to other HROs.

The lessons and the suggested tactics listed in this report originated from the focus group participants themselves. If any of the suggested tactics seem idealistic, they still hold value as evidence of creative approaches to problem solving from the field.

Communication—Lessons

LESSON LEARNED: *Set clear expectations early in the process about communication frequency and delivery method.*

Description: Field-level employees expressed concern about receiving too much information at key points in the year. Often, information was not directly relevant to them, and the simultaneous circulation of both drafts and final copies of documents created confusion. Consequently, employees began to rely more upon line-officers or supervisors to filter “important” information for them.

Suggested tactics from the field:

- Standardize and communicate what content to deliver and which method of communication to use: phone, email, text, SharePoint, and so on.
- Establish a consistent schedule for updating policies, such as “Policy Updates on Tuesday.”
- Assign or hire specific people to organize SharePoint as information is being added.
- Identify how to ensure that collaborators outside of the organization are receiving the same messages as agency employees.

LESSON LEARNED: *Clearly identify the message source to build credibility and organize messages for readability.*

Description: The work environment in wildland fire and across the agency was full of uncertainty, especially about scientific information. Participants wanted to know more about the sources of the messages. Additionally, when there is a lot of information to share, a preview or summarizing statement at the beginning of the message is important.

Suggested tactics from the field:

- Consult with and directly quote scientific and medical professionals and provide their credentials in the message. One participant mentioned that risk assessments should be developed by subject matter experts (SMEs) and that the results of that risk assessment should be shared with the credentials of the SME.
- When no clear answer is available, say that. Don't let the silence hang.
- Acknowledge that message differences may occur between what employees obtain from their own external news sources and what official sources (e.g., CDC) say- that employees must adhere to the official guidelines.
- Develop and implement a plan to track documents as they evolve by providing the date in the file name and a brief explanation of the changes from the last revision (e.g., "This document includes changes to sections 2.1 and 4.3.").

LESSON LEARNED: *Recognize the increased need to communicate with local communities.*

Description: Specifically, the need to coordinate with local health department and/or emergency management agencies emerged as the pandemic unfolded including an increased need to communicate with members of the general public who were trying to use recreation sites.

Community partners such as emergency management agencies and other public health partners were extremely valuable early in the process when it came to COVID-19 testing. Additionally, the need to communicate with members of the public became increasingly more important as employees had to interact with them in recreation areas and often encountered a disgruntled public.

Suggested tactics from the field:

- Develop and share operating plans with community partners.
- Identify conflict management strategies for employees who find themselves caught between enforcing Forest Service policy and meeting the differing wishes of the public.

LESSON LEARNED: *Acknowledge the need for informal communication.*

Description: People were hungry for casual conversations with colleagues. The units that were adopting informal methods of connection were allowing for those hallway connections to continue. Additionally, supervisors were identifying a need for one-on-one connections with their direct reports.

Suggested tactics from the field:

- Identify ways for people to stay connected in an informal way (e.g., socially distanced parking lot meetups).
- Supervisors should carve out time to check-in on employees, but not just about work tasks. Phone calls, Teams calls, or even a quick text message can help when people feel isolated.

LESSON LEARNED: *Determine what we should keep in digital platforms, or what should be accomplished face-to-face (FTF).*

Description: The experience of COVID-19 demonstrated what could be accomplished digitally. There is an opportunity to assess what worked well with technology, what suffered because it had to be accomplished digitally, and what other opportunities exist.

Suggested tactics from the field:

- Continue to use digital platforms and technology that proved useful (e.g., virtual timecards, video technology to film reconnaissance ('recon') flights, virtual check-ins/demobilizations ('demobs'), virtual morning briefings, and so on.
- Continue to explore alternatives to in-person briefings that preserve information and intent that may be "lost" because of a lack of non-verbal communication.
- Explore training opportunities that can be provided effectively on digital platforms.
- Identify which "traditional methods" are important to preserve and which can be migrated to digital platforms permanently.

LESSON LEARNED: *Technology infrastructure needs improvement.*

Description: The rapid adoption of digital technologies catapulted the Forest Service into a new level of use. New technologies were tested, revealing strengths and weaknesses of appropriate use. Not everyone has the technology they need to telework or stay up-to-speed with technological needs on a fire.

Suggested tactics from the field:

- Assess existing technology needs (e.g., need for hotspot devices for those who are teleworking, need for satellite phones, cell phones, Spot/inReach devices, Bluetooth projectors that can display from a phone for briefings, and “cell on wheels” or COWs).
- Conduct more preplanning for digital platforms so enough software licenses and accounts are available to meet the needs of the field.
- Coordinate with cooperators to determine their digital capabilities.

LESSON LEARNED: *Determine required technology and provide needed training.*

Description: People may not know how to use the required technology or have access to certain information via that technology.

Suggested tactics from the field:

- Resource orders should specify the technology necessary to operate on an incident and the capability level of the user. Special needs should be listed, and the resource order should stipulate that the people using the device have the ability to operate the technology.
- Responders have difficulty relaying information from internal agency shared information sites to cooperators and partners due to firewalls that prevent access to partner agencies.
- Assess the need for training before introducing new technology or software. Provide more front-end training on technology or software before it is fully implemented.

Communication—Discussion and Long-term Considerations

Early in the year, focus group participants simultaneously felt overwhelmed by and uninformed about COVID-19 information. This paradox suggests the Forest Service could manage organizational communication more strategically. Communicators can point to the dynamic nature of the situation and acknowledge where information gaps exist.

During COVID-19, focus group participants reported communication gaps, especially at the agency’s mission level. For frontline workers in wildland fire, downward communication had the greatest impact on information overload and confusion. In other words, meaning was lost as messages from upper administration were communicated to the local levels. The translation of the general into the specific is vital.

People who are dealing with a significant, relevant threat need three primary types of information: details on the unfolding of events, the organizational response, and self-efficacy, or ability to act (Sturges 1994). Our analysis found that while senior-level

leaders communicated guidance and directives to wildland fire employees by using a doctrinal approach, no clear mechanism existed for determining how or if those directives were being implemented. In the following discussion, we suggest mechanisms to improve communication for each of the three types of information.

LONG-TERM CONSIDERATION 1: *The Unfolding of Events*

Probably the most consistent need is for basic factual information that tells the story of the crisis. People want to know what is happening, who might be affected, and where the events are unfolding. The information that would be included by a thorough journalist in a newspaper article provides an excellent foundation (namely, who, what, where, when, why, and how). The Forest Service could construct a narrative that tells the story of events that is relevant to all fire management operations within the agency. Then, regular updates can make reference to the previous telling to explain what still holds true, but also point out what parts of the story have changed. The means of communication should also be consistent so that people know to look for updates, for example, regularly on Tuesdays through an email from the Chief's office. If individuals feel out of the loop, they will know to look for that Tuesday email, and a direct supervisor can provide any clarification.

LONG-TERM CONSIDERATION 2: *Organizational Response*

The focus group participants wanted information about what Forest Service fire management was doing to respond. Leaders could explain the steps that have been taken to meet the needs of the organization. They could also explain new actions that will be implemented, and what might be required in future fire operations. The focus group participants did not expect that leaders would always have a clear path to follow, but they did expect to know that those decisions were being made carefully. Thus, an explanation of the decision-making process would be valuable to employees.

LONG-TERM CONSIDERATION 3: *Self-Efficacy*

Self-efficacy is the extent to which people have meaningful actions that they can take to respond effectively to an event. The focus group participants wanted to understand what they should be doing to aid the response. For example, they wanted to know when and where they should wear PPE and under what conditions they should report to work. Generally, the greater a sense of self-efficacy that people felt, the more likely they were to engage in more-productive behaviors, according to focus group discussions. Counterproductive responses were often the result of participants perception that they had too little information. Self-efficacy can be improved by describing ways in which employees can take action with limited information.

Organizational Culture—Lessons

LESSON LEARNED: *Focus group participants struggled with the tension between needing “decision space” vs. needing guidance from leadership.*

Description: Although significant appreciation exists for the opportunity to make decisions based on the situation, participants voiced concern over the support decision makers would receive if there were a bad outcome resulting from their decisions. Conversely, many people just wanted clear, concise direction during this time of uncertainty.

Suggested tactics from the field:

- Test leadership decisions with the people who are affected by them before sending the decisions down.
- Clear purpose could be the vehicle to providing better communication and sideboards where adaptability and innovation can occur.
- Use a delegation of authority to reduce the discomfort of enforcing mitigations.

LESSON LEARNED: *Lack of trained staff in leadership positions and a lack of opportunities for leadership training.*

Description: Many leadership positions were understaffed, leading to increased pressure on supervisors to remain healthy and available for assignment.

Suggested tactics from the field:

- Look for ways to offer additional training opportunities, especially those that cannot be completed online.
- Expand training content to include lessons learned from COVID-19.

LESSON LEARNED: *Employees shared extreme concern for the safety of their families and community members.*

Description: Traditionally, firefighters know that they take on risk when they go to a fire, but the thought of taking the risk home and infecting a family member or spreading COVID-19 in the community, presented a significant, new type of stress for employees.

Suggested tactics from the field:

- Provide an agencywide family leave allowance for people taking care of sick relatives, including children. If sick leave or family leave can be used for this purpose, it is not completely understood by or widely communicated to employees.

- Institute leniency in assignment duration as a potential means of increasing resource availability. Many respondents cited a hesitancy to commit to 14- or 21-day assignments when a “nonpersonal” emergency might arise, such as a sudden change in a child’s in-school status.
- Create an annual leave “bank” where hours can be shared easier to contribute to and to use (some employees mentioned not knowing this was available at all).

LESSON LEARNED: *Employees shared multiple concerns about their local communities.*

Description: Personnel shared concerns about the public not understanding that Forest Service employees might not be able to respond to fires as normal, and the public becoming confrontational in places like recreation areas, where the employees were tasked with keeping them out or having to limit public use despite a message from local and State officials to “take advantage of the great outdoors.”

Suggested tactics from the field:

- Encourage using a risk management protocol for social situations like these. Risk management protocols may not seem to have been created for this kind of situation, but they can be used to identify hazards of all kinds. If the hazard is that we have too many people in one recreation area, we may just need additional parking attendants. If the hazard is related to confrontation, more law enforcement might be the mitigation.

LESSON LEARNED: *Employees shared concerns about their fellow employees in the work environment.*

Description: Employees voiced concerns about the potential escalation of frustrations between employees stemming from discrepancies in comfort levels with exposure and mitigations. They also shared concerns about financial burdens on employees who relied on overtime pay.

Suggested tactics from the field:

- Develop and use alternative behavioral health support including (a) the Stress First Aid continuum to start conversations with employees around how they are doing, (b) peer-to-peer networks, and (c) the use of the Employee Assistance Program (EAP) to gain another perspective beyond personal stress inventories, such as those provided in Stress First Aid.
- Use anonymous surveys to gauge willingness to take assignments, comfort levels, etc.
- Make time for one nonwork-related call each week to check on employees.
- Create ways to help take the burden off employees to “police” other employees about mitigations.

- Encourage people to take allotted days off and promote a self-care culture, with supervisors setting the example.

LESSON LEARNED: *COVID-19 made particularly vulnerable positions more overt.*

Description: Employees voiced concerns about (a) the vulnerability of dispatch units (e.g., lack of internet-based radio options or home-based radio options), (b) aviation (high reliance on contract pilots, requirement to quarantine for 14 days if they cross State lines, etc.), (c) hospital liaisons (How do they do their work if they can't get into the hospital?), and (d) medical unit leaders (What if the Med-L gets sick?), safety officers (being responsible for deciphering and disseminating all of the COVID-19 programs as well as the aid programs has been intense), and (e) the many positions traditionally filled by ADs (many of whom are retired) and militia, who were less available to support crews and local fires.

Suggested tactics from the field:

- Explore alternative dispatch technology infrastructure.
- Conduct a full "2020 aviation lessons learned analysis" that focuses on staffing.
- Consider filling some positions with two people (for example, one medical unit leader and one medical unit leader who deals only with COVID-19). The same suggestion applies to public information officers.
- Add an infectious disease specialist to the Incident Management Team (IMT).

LESSON LEARNED: *COVID-19 highlighted the need for clear definitions of terms and designations of positions and expectations.*

Description: Confusion existed because people did not know if wildland fire-fighters (WFFs) were considered first responders, if WFFs were considered to be in a high-risk category for COVID-19, or which people were essential employees.

Suggested tactics from the field:

- Use this opportunity to clearly define or revise current definitions of terms, update the playbooks, and clear up abstractions (ensure WFFs are classified as first responders to ensure access to appropriate resources before and after exposure, and after testing positive).
- Provide documentation to seasonal and temporary employees outlining expectations prior to onboarding.

LESSON LEARNED: *COVID-19 exposed existing issues with workers' compensation.*

Description: People told stories of their difficulties related to workers' compensation including delayed care, denied care, and denied payments for COVID-19 tests. Additionally, no after-hours options for workers' compensation currently exist.

Suggested tactics from the field:

- Create and circulate an after-hours plan for WFF injuries that does not completely rely on hospital liaisons (since WFFs cannot always enter the hospital).
- Streamline procedures and update training.
- Consider having the Forest Service carry its own workers' compensation program.

Organizational Culture—Discussion and Long-term Considerations

Maintaining a healthy culture is invaluable to any organization. Culture is particularly relevant to the Forest Service wildland fire community. Employees expressed deep identification with the values and mission of wildfire operations and have a significant sense of identity related to those internalized beliefs. People's identities are established and developed in three main ways: experience, expectations and norms, and training. Regarding professional experience, Forest Service fire employees reported understanding their role based on what they have done in the past. Second, behaviors and beliefs were influenced by perceptions of organizational norms and professional expectations. The focus group participants considered what they believed other relevant and credible people were expecting, or more importantly, were doing. Therefore, expectations and norms need to be made clear. Regarding the third way of developing professional identity, the focus group participants reported that when faced with high levels of uncertainty, they fell back on their training. According to results from these focus groups, the more that training was applicable to a particular set of circumstances, the more the employees would adhere to that training. Forest Service fire employees can be trained regarding culture as well. For example, expectations can be communicated to new employees through formal and informal enculturation.

LONG-TERM CONSIDERATION 4: *Local Adaptation*

The Forest Service has a strong culture of local independence. Decision makers interpreted and applied directives and guidance on the local level in a manner that they viewed as most applicable to local conditions. When employees have a deep, mission-focused identity, they often process directives in terms of “how this will affect my ability to achieve my objectives.” For example, after the Forest Service Chief's Letter of Intent for wildland fire (Christiansen 2020) was shared, the focus groups centered on whether the new guidance would change how employees would respond to fires. The response to COVID-19 was affected by these cultural considerations. Senior leaders and other employees did not always understand the extent to which directives could be adapted. Moreover, innovations at the regional and local level may not have been shared quickly and efficiently due to an underappreciation of their relevance to other locations. More regular interactions that cross regional borders—rather than a local focus—could promote a more organization wide culture.

Employees in the field stated that they could not accomplish everything demanded of them, in every moment. Local adaptation also must accommodate the need to strategically decide to act on high priority needs first. Potential Operational Delineations (PODs) analysis and other Decision Support System tools may be used to establish local priorities for forest management efforts, including determining the appropriate scheduling of prescribed fire and other multi season wildfire mitigation efforts.

LONG-TERM CONSIDERATION 5: *Upward Communication*

Participants clearly valued the focus groups as a way to provide both horizontal (peer-to-peer) and upward communication. Due to lack of feedback, focus group participants felt that people above them in the hierarchy were not hearing the information that they provided. Sometimes the frustration resulted in some participants not wanting to join future meetings. Shared solutions were not always perceived as being welcomed by individuals up the organizational chain of command. Some attempts at innovation were met with a hard “no,” without a rationale being offered. Providing additional information should not be seen as a response to employees questioning authority, but rather it should be viewed as an opportunity to identify the extent to which innovation may be enacted.

Forest Service leaders can foster a culture where upward communication is valued through a more dynamic feedback loop. Important concerns need to be acknowledged and addressed in a timely manner. Systems that provide rapid responses can be



Firefighters plot strategy around a map in the field at the North Complex Fire, California, September 2020. USDA Forest Service photo by Kye Funk.

established and promoted. The agency's pandemic coordination team used an FAQ and Request for Information system in an effort to reach employees. The more that field employees saw their questions were being answered and their concerns addressed, the greater their propensity to continue sharing feedback. In this way, the Forest Service can develop a culture of responsiveness and active information sharing.

Forest Service wildland fire personnel value having a culture of continuous improvement. Careful attention can be paid to aligning organizational beliefs and values with decisions being made and actions being taken in the field. The focus group participants indicated that they look to leaders to provide guidance. They also appreciate flexibility and the ability to adapt leaders' direction to their local needs and conditions.

Organizational Learning—Lessons

LESSON LEARNED: *Anticipate and address the “health and safety vs. productivity” narrative likely to emerge during the unfolding of a crisis.*

Description: Focus group participants voiced concern that adhering to COVID-19 mitigations could actually create a less safe working environment. Some raised concerns that mitigation efforts were worthless because (a) the agency cannot control what people do outside of work, (b) firefighters cannot physically distance during an evacuation or an incident-within an incident (IWI), and (c) the interagency response often does not align with single-agency planning and produces inconsistency in strategy.

Suggested tactics from the field:

- Create messages that inoculate against this type of thinking. In other words, think through the “what-if” scenarios wherein people would say “it’s just not safe to wear a mask or use hand sanitizer” or “driving alone instead of flying means we have more people on the roads and a higher chance for wrecks” and provide answers that debunk this reasoning specifically. Quote sources for risk analyses.
- Identify and circulate success stories of successful mitigation and mission accomplishment, such as applicable Rapid Lesson Sharing accounts.
- Clearly state when a safety practice, such as wearing a mask, is not optional.

LESSON LEARNED: *Employees raised concerns about the costs associated with testing, housing, and purchasing COVID-19-specific personal protective equipment (PPE).*

Description: Focus group participants expressed concern about not having a separate job code for charging equipment or paying for resources associated with COVID-19 mitigations. Participants also stated that additional mechanisms outside of normal ordering and purchasing chains were not being made available.

Suggested tactics from the field:

- In the event of a pandemic, there is likely to be competition for PPE, digital thermometers, cleaning supplies, and so on. This means we need early and effective nationwide protocols for novel purchasing requirements at the individual and unit level.
- Identify and allow National Institute for Occupational Safety and Health (NIOSH)-approved suppliers outside the normal ordering chain.
- Identify housing and how to pay for seasonal employee housing outside of bunkhouses.
- Set up a way for asymptomatic carriers to continue working while quarantined.

LESSON LEARNED: *Participants perceived a patchwork of COVID-19 mitigation strategies, and worried that they would not be able to navigate the differences in regional requirements.*

Description: Different regions, States, units, IMTs, and so on have different COVID-19 mitigation requirements for travel and while on an incident. This also added to the emotional burden of supervisors who were left to make potential life-or-death decisions for employees without a singular guiding organizational message. This also placed supervisors in a position where they felt like they might appear to be undermining another supervisor's instructions.

Suggested tactics from the field:

- Help close the loop between the sending unit and the receiving unit ahead of time so that people know what to expect when they travel across administrative boundaries (counties, States, geographic areas, etc.).
- Share or mitigate the additional risk and burden of supervisors.

LESSON LEARNED: *The focus groups allowed for the sharing of real-time information, which enabled shared learning and collective problem solving.*

Description: Participants reported that the focus groups allowed them to share information with neighbors and across regions. They reported feeling that the information sharing of lessons learned and innovations has improved drastically over years past and has been critical to navigating through the COVID-19 pandemic.

Suggested tactics from the field:

- Use regular (quarterly, for example) focus groups to allow for information exchange.
- Continue to embrace organizational learning strategies, such as continuous focus groups, in situations like COVID-19.

LESSON LEARNED: *Learning efforts need to be coordinated and streamlined.*

Description: Participants voiced concern about the creation, sharing, and housing of learning products and the need for after-action reviews in additional areas. They also voiced concerns that people who are writing the after-action reviews are being overwhelmed with follow-up questions.

Suggested tactics from the field:

- Require written reviews (not just verbal ones) and ensure they get funneled up and throughout the organization; ask directly about what they did to mitigate COVID-19 as a hazard.
- Centralize lessons learned, identify the most essential, meaningful nuggets, and provide opportunity for digesting and introspection at the end of the year.
- Request reviews for the workers' compensation process and share the lessons.
- Create a version of the Lookouts, Communication, Escape Routes, and Safety Zones (LCES) for COVID-19. LCES is built on a small set of things to help people remember those that have the most impact.



Firefighters move a mock patient on a backboard during training, Rio Grande National Forest, Colorado, July 2020. USDA Forest Service photo by Rio Grande National Forest.

- There is a need for an expansive, end-of-year review looking at how the Forest Service approached and handled COVID-19.

LESSON LEARNED: *Scenario-based training around COVID-19 is needed.*

Description: Participants voiced concern about the creation, sharing, and housing of learning products and the need for after-action reviews in additional areas. They also voiced concerns about how people who are writing after-action reviews are being overwhelmed with follow-up questions.

- Use sand table exercises to simulate a fire and COVID-19 considerations.

LESSON LEARNED: *Moving forward, training materials and reference guides need to include COVID-19 (or at least an emphasis on airborne communicable diseases).*

Description: None provided.

Suggested tactics from the field:

- There is a need to create new employee guides that include COVID-19 related guidance.
- Add checklists to the Incident Response Pocket Guide.
- Create easy to understand and easy to implement standards for COVID-19 mitigations. For example, a quick way to think about vehicle occupancy is “number of moving windows, equals number of people allowed in the vehicle” and implementing a point-of-sale system for fire camp (use bar codes instead of paper orders).
- Continue to refine the “module as one” concept.

Organizational Learning— Discussion and Long-term Considerations

Organizational learning is the process of understanding, retaining, and communicating new information and innovations. True organizational learning goes beyond problem-solving. It includes reexamining underlying assumptions, justifications, goals, strategies, and approaches. Fire employees can be encouraged to question why the Forest Service is doing what it is, and in turn, leaders could be prepared to listen, learn, and work together with employees to find answers to their questions. Awareness of any particular context needs to be in alignment with core fire management operations and agency beliefs in a conscious, deliberate manner.

Barriers to learning can be minimized, and the analysis of focus groups revealed three impediments to learning. The first impediment is viewing events as isolated instances. Participants viewed many problems as incidental or independent, rather than a part of a larger fire management system. At times, when one person shared a story about a problem, other people spoke up to say that they had seen the same issue. Common

causes were often identified that went beyond that particular instance, which also gave participants clues about what to look for before a problem might manifest itself. This is akin to the HRO principle of identifying seemingly small events which, cumulatively, express a large, systemic issue or impact.

The second impediment, satisficing, is a strategy for decision making that is employed as an efficient way to arrive at an adequate result. When using this approach, people avoid wasting time and resources by not worrying about finding the one optimal solution—if one exists at all. In other words, people avoid striving for a theoretical ideal when a “good enough” solution will work. During a crisis, time and resources are limited; therefore, satisfactory, but nonoptimal, solutions are common and sometimes necessary. However, those decisions could be reexamined after the crisis. When a sense of normalcy returns, the introduced or altered practices, policies, and procedures may then be reevaluated to determine if alternatives exist that would be more appropriate in future situations. The innovations that emerged during COVID-19 could be assessed to determine if they should be continued, adjusted, or avoided in the future. This approach reflects the HRO principle to seek and act through the most immediate, most relevant information at the time, regardless of the informant’s status in the organization.

The third impediment to learning that emerged from focus group analysis is a lack of Forest Service institutional memory. Not only must a learning organization have a way to remember the challenges it has faced and the solutions it has discovered, but that information must also be readily available to its members. During COVID-19, FireNet and the Wildland Fire Lessons Learned Center were examples of interagency resources that were used in a central way. In addition to typical use as an interagency email platform, employees used the Wildland Fire Lessons Learned Center as a repository to share information, problems, and solutions. Fostering long-term use of sites of institutional memory is vital because past decisions serve as the foundation for future responses. Fostering institutional memory adheres to the HRO recommendation to establish a mindful organizational culture whose awareness is poised not only for initial assessment but also for the capture and thorough reexamination of normal work.

LONG-TERM CONSIDERATION 6: *Systematizing Iterative Learning*

To achieve the goal of effective responses to negative events in the long term, several actions are warranted. First, the Forest Service wildland fire community needs mechanisms to learn how to learn. Organizational learning can be an organic, naturally unfolding process; however, objectives are more consistently achieved when it is systematic and well-planned. The fire community could invest time and resources in systematizing organizational learning. Just as people can be trained to evaluate risks in the moment, employees can learn to identify insights and innovations that unfold during crises. The IOL would be the logical lead for such efforts.

LONG-TERM CONSIDERATION 7: *Reinforcing Institutional Memory*

Additionally, ways to capture those insights must be established so that the same lessons do not have to be relearned “the hard way” during new crises. A central repository for lessons learned during the pandemic is needed, likely online so that it becomes a dynamic space where information can be shared easily and effectively. When the crisis began, many different entities within the Forest Service were attempting to capture lessons learned from COVID-19. The extent to which those groups were coordinated is unclear. A central location for the various reports and other products could increase collaboration and awareness and would help prevent the knowledge from eroding over time. It would be unfortunate if lessons captured in reports end up gathering dust on a shelf and having little impact on the future of Forest Service wildfire management operations. The person identified as the National Pandemic Coordinator could champion this effort.

Overall, the lessons learned for communication, organizational culture, and organizational learning represent a wide array of insights that emerged from the focus groups. The next section builds upon on-the-ground lessons learned and offers a higher-level analysis of how to conceptualize some of these findings within broader operational spheres of policy, decision space, and personal life.

Managing Broad and Lingering Uncertainties of COVID-19

The focus group data illuminated how COVID-19 introduced new dimensions of uncertainty into wildland firefighting in 2020. The crisis amplified and compounded issues related to the organization of work and the management of personal life. But unlike previous fire years, the pandemic conditions of 2020 more clearly demonstrated overlaps in the realms of work life and personal life. These overlaps often had a multiplicative effect on the stressors that workers experienced. The on-the-ground lessons learned from the focus groups instruct us in how members of the Forest Service firefighting community managed themselves under new conditions of existing issues in several ways. This section examines wide-reaching and long-term impacts from the COVID-19 fire year. We identify three broader challenges—policy, decision space, and personal life—that combine to impact decision making for individuals at every level of agency action. While some of the issues we discuss here are also mentioned in the lessons learned, our intent for this section is to provide a wide-angle lens for examining the way that challenges related to policy, decision space, and personal life are likely to interact for Forest Service and other agencies going forward.

Policy

Agency policies continually emerged throughout the COVID-19 response (for instance, wearing masks, sanitizing touched surfaces, physical spacing) and within the broader mission guidance from the Forest Service and the Department of Agriculture. While

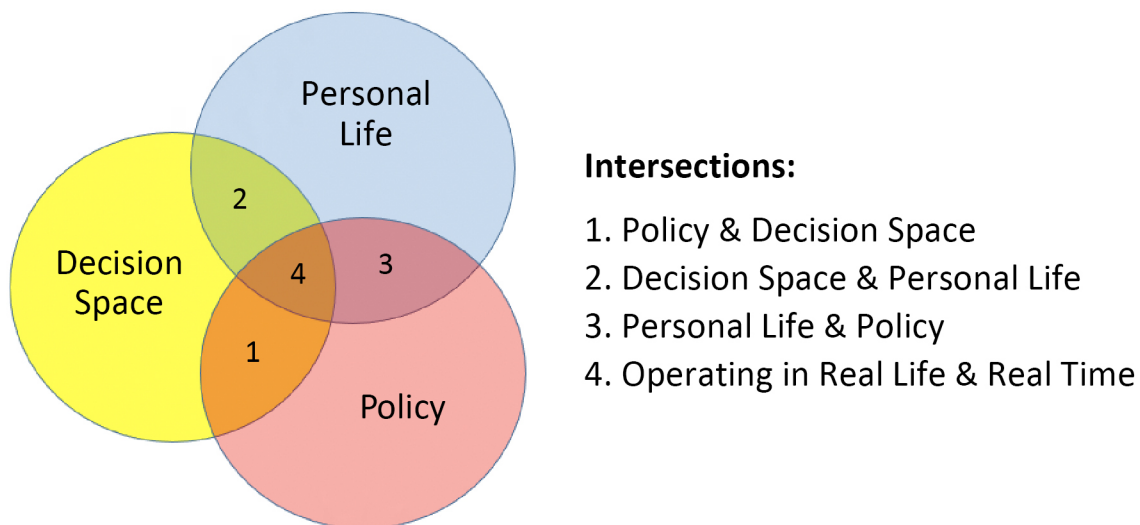


Figure 3—Context of decision and intersections of uncertainty.

these orders created certainty of desired action, the emerging uncertainty regarding the range of specific work environments and the stipulations of local regulations still created policy uncertainty. Guidance from the Centers for Disease Control and Prevention (CDC) often clashed with normal fire operations (for example, densely populated fire camps, close proximity to peers) in ways that posed challenges and sometimes safety hazards if fire personnel were to adhere to both CDC and normal firefighting procedures. Later, the Forest Service also followed guidance from the Wildland Fire Medical and Public Health Advisory Team (MPHAT) and Wildland Fire Lessons Learned Center. These directives were seen as helpful and appreciated. However, they require adaptation in order to implement them in specific contexts.

Decision Space

While capability to make adjustments and adapt to changing circumstances can be empowering, fire personnel found themselves in novel administrative territory: they needed to make arrangements (such as purchasing new types of PPE, making travel plans, getting tests) not previously required. Moreover, such arrangements fell outside of many purchasing protocols, for example, leaving personnel with lose-lose choices of either not procuring and using their own PPE or exceeding their scope of authority. Particularly in the absence of sufficient guidance and supervisory support, such situations radically increased pressure and stress levels. Adoption of the doctrinal approach ultimately led to organizational adaptability and situational changes within the employee and the managerial decision-making space.

Personal Life

COVID-19 prevented many fire personnel from maintaining a clear separation between work and personal life. While fire personnel are accustomed to taking risks, those risks are generally perceived as being taken in the field and left at work. However, efforts to control viral spread within the firefighting community resulted in employees committing more time to their work units as compared to normal circumstances and introduced the risk of potentially spreading the virus between work and personal spheres.

Policy, decision space, and personal life did not occur in isolation but interacted—colliding and compounding—in ways that are important to understand going forward. Given the strong interactions among these three realms, we developed a diagram (fig. 3) intended to help describe conditions and assist others in thinking about issues, mitigations, and solutions. The three areas intersect to create challenges and opportunities that will be present for Forest Service wildland fire management. Each numbered space in the diagram represents the uncertainties that emerge at each intersection. These issues are likely to arise again and have staying power in shaping wildland fire management operations well into the future.

Understanding these intersections provides a means to consider—and act upon—each broader issue going forward. These spheres may overlap in different proportions, meaning that the amount and intensity of overlap can change at any given time and circumstance. We analyze each of the four areas of intersection next. We also offer recommendations. These recommendations emerged from the IOL focus group project and are not the result of a comprehensive needs assessment. Some of these recommendations may have been implemented or may be in progress at the time of this report.

Intersection 1: Policy and Decision Space

Clarifying who has authority over proposing, approving, and implementing COVID-19 guidelines imposed changes on normal operations. First, firefighters encountered situations in which they needed to alter regular firefighting practice to accommodate COVID-19 safety guidelines, but they were not sure if they had the authority to change practice. Uncertainty presented itself as “COVID-19 related decisions are above my pay



Members of the Rifle Peak crew from Nevada prepare their gear on the northwest side of the Slink Fire, Colorado, September 2020. NIFC-Inciweb photo by Charity Parks.

grade.” Second, field-level firefighting personnel (such as crews) and agency units (such as districts) were somewhat siloed from one another and were left to face challenges and devise solutions without knowledge of their peers’ approaches. Based on our focus group analysis, we suggest that agencies facing emerging complexities work to reduce uncertainty about the intersection of policy and decision space for organizational members. The development of an Incident Management Remote Response (IMRR) network to facilitate real-time information sharing on a weekly basis across incident management leadership (Day and Kuiken 2022) helped to reduce some of the isolation that units were experiencing.

Considerations

Provide clear mechanism(s) for gaining approval when making out-of-the-ordinary decisions due to pandemic (or other unusual) circumstances. Types of unusual decisions could involve use of purchase cards or changes to typical firefighting safety practices.

Communicate values and goals to provide direction for decision space. Clear communication about permissible decision space indicates how much self-efficacy or ability to act is present. For example, MPHAT’s statement to “deal with the risk that is in front of you” provided useful guidance and direction about when to choose COVID-19 mitigations or traditional fire safety (for more information on COVID-19 Wildland Fire MPHAT guidance, see: <https://www.nwccg.gov/partners/fmb/guidance-prevention-management>). Continual updates regarding new policy that may reduce or maintain decision space can reduce uncertainty.

Establish a cross-functional or peer-to peer support network with regular communication (or both) (for example, regular calls within occupational groups) so people know what others are encountering in the field and how they have dealt with that issue. The focus group process (and rapid lessons sharing documentation; for more information on reading or submitting Rapid Lesson Sharing [RLS] documents, see: <https://www.wild-firelessons.net/resources/rapidlessonsharing>) provided a peer-to-peer communication channel for understanding the challenges that others had faced and how they handled the decisions. However, the lessons were not available in real time.

Intersection 2: Decision Space and Personal Life

When employees make decisions in uncertain contexts, they are engaging in a form of personal risk. These risks can include personal health and safety—and career risks. When some employees felt compelled to make quick decisions in the uncertainty of COVID-19, they expressed concern that they would not be supported. Making a tough decision (or using an innovation) could result in stepping on toes in such a way that hinders professional advancement. A bad outcome can potentially result in career damage. Moreover, managing the emotional and psychological toll of COVID-19 risks added to

typical stress. Evidence indicates that the wear upon mental health was significant (see Lessons Learned, Suggested Tactics, and Considerations for Future Application). Future uncertainties introduced by COVID-19, other potential diseases, natural disasters, extreme fires, and social turmoil mean that mental health is becoming a more salient issue for the agency.

Considerations

As suggested in the preceding considerations, communicate an understanding of the complexity of decisions, including the need to make decisions within visions and goals, and assurance that a wide range of decisions will be supported. Further, the boundaries of decision space should be clearly communicated. For example, stating that not all decisions can be anticipated but clearly restating the vision and goals creates a safer space for learning and lessens fear of career risks for decision making.

Provide resources to manage mental health and the unique stressors associated with COVID-19. Applying this suggestion presents a challenge and an opportunity to open conversations about mental health independent of the status of COVID-19 and to implement policies and procedures related to the management of employees' psychological well-being.

Intersection 3: Personal Life and Policy

Clarifying the extent to which employees control their work influences their nonwork life. COVID-19 blurred the line between work and nonwork risks in new ways. Both the risk of bringing COVID-19 home and the possibility for nonwork activities to introduce risk to coworkers complicated the intersection of these two spheres. Concerns about the ability to conduct remote work, to turn down assignments to ensure safety at home, and to financially afford to decline work were each raised in the focus groups. At the same time, further financial costs such as medical expenses from COVID-19 and cost reimbursement for testing (early in the fire year) created uncertainty and a sense of lack of support from the agency. Additionally, the social actions and choices of coworkers could also potentially bring COVID-19 into the workplace.

Considerations

Policies should reflect desired outcomes, with rewards for choices to work when healthy and to report health concerns. Evidence points to a variety of ways that employees made the personal calculations of tradeoffs between working and not working. The tensions that arise here are often financial: whether or not employees get paid for quarantining, and their decision to not test or not report in order to get overtime.

Provide tools for weighing decisions along with safe spaces for communicating them to the organization. Policies and procedures related to consequences to minimize any

retaliatory actions directed toward personnel advocating for themselves may help create a culture of psychological safety.

Offer avenues for voicing concerns or making suggestions anonymously to preclude worries related to retaliation against an individual. Policies and procedures that clarify how individuals can voice concerns would alleviate stress for those unsure of sharing their thoughts. Create a safe space for employee voice. Considerations include voice efficacy (empowered to successfully advocate for oneself) and voice safety (ability to turn down assignments or speak without fear of retaliation). The use of SAFENET, a confidential database for frontline firefighters and support staff to report unsafe or unhealthy situations and near-misses (for more information on SAFENET, see: <https://www.nifc.gov>) is valuable in this regard but tends to focus on fire-related issues experienced by frontline firefighters. A mechanism for reporting stress on nonsafety-related issues could be warranted.

Intersection 4: Three Spheres Operating in Real Life and in Real Time

When all three spheres are enacted simultaneously in the field, complex decisions impact policy outcomes, decision space, and personal life. All persons act on their own within their own sphere of influence, but with a complex system come complex outcomes and higher uncertainty. One specific example that emerged from the focus groups is the way that testing for COVID-19 impacted all three areas. The option to test or not as individuals on assignment left the difficult choices of potentially missing overtime pay and leading to the quarantine of coworkers. On the other hand, not testing could result in infecting others in the workplace, thus endangering them.

Considerations

The primary considerations from the other three intersections and lessons learned converge in this section. Policymakers and members of the agency at all levels would do well to be aware of how these spheres are converging for everyone. Further, monitoring outcomes, especially unintended outcomes of decisions, is critical for maintaining a healthy, safe, and capable workforce.

COVID-19 brought the overlap of policy, decision space, and personal life into a more intertwined existence for Forest Service employees. Finding means for open communication within levels of the agency and also vertically provides the ability to be responsive to the uncertainty that COVID-19 and other unexpected events may create.

Considering all the intersections and interactions of policy, decision space, and personal life will be useful given the uncertainties that were created by and amplified by COVID-19. The Forest Service fire management organization felt the effects of uncertainty in each sphere and the intersections of those spheres. The agency met many of these challenges with evolving policies, projects such as this focus group effort, and a

collective desire to successfully complete fire management operations. Though an exhaustive list is beyond this report, the model of intersecting spheres introduces a useful framework to think about wide-reaching and long-term impacts to the wildland fire-fighting profession due to work challenges and changes that COVID-19 imposed.

Conclusions

This report reveals overlooked and emerging issues, pinch points, and weaknesses focus group participants identified during the 2020 wildland fire year. COVID-19 upended an already complex high reliability organization (HRO), as well as the common everyday work practices and challenges of senior-level fire leaders and field-level employees. This study found that the current mechanisms for distributing critical information to the field led to an overwhelming amount of information that was perceived as scattered, redundant, unspecific, and at times nonexistent. The paradox of receiving too much information and not enough information to make critical decisions in the field left mid-level managers feeling alone and unsupported by the agency. Mid-level managers were encouraged to make decisions based on fire management principles and doctrine. But unlike fire, COVID-19 presented an additional—and very different type of—risk compared to what they usually face in a fire year. Without any epidemiological experience, senior leaders and fire managers were expected to make decisions that impacted their employees and families in new ways (for example, testing, quarantine,



Fire managers hold a briefing about the Drops Fire, Idaho, August 2020. Bureau of Land Management photo by Austin Catlin.

housing). Mid-level managers looked for clear and concise direction from senior leaders and medical experts, yet the overwhelming amount of information that flowed to them early in the fire year created confusion and greater uncertainty.

This report documents and provides an example of how Forest Service wildland fire employees made sense of COVID-19 during fire year 2020, and how the agency made a deliberate effort to practice HRO principles by learning from a crisis. Hundreds of lessons learned emerged from the focus group interviews and are synthesized in this report into broad lessons learned and corresponding tactics suggested by field personnel. Broad lessons learned emerged within three overarching categories: Communication (message quality and information flow as well as communication technology and tools), Organizational Culture (leadership, employee mental health and wellness, and employee work and staffing), and Organizational Learning (learning about COVID-19 safety and reflections on learning in real time).

In addition, decision uncertainty arising from the pandemic is likely to have widespread and lasting impacts on wildland firefighters at all levels of the organization. Thus, we argue that the pandemic introduced new uncertainties and exacerbated existing stressors for wildland firefighters at the intersections of the following: policies and procedures, including a tension between guidance from the Centers for Disease Control and Prevention and the demands of wildland fire operations; decision space—the need to make decisions without clear administrative guidance; and personal life—the overlap of work with personal life. The intersections between and among these three broad challenges created uncertainties and opportunities that are likely to shape wildland fire management operations well into the future.

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Appendix

Weekly report production schedule, March 23, 2020 to October 30, 2020.

WEEK 1

Monday

- Team: Focus group facilitators and writer/editors
- Task: Group status check in and discussion
- Purpose: Organize personnel and discuss administrative issues.

Monday and Tuesday

- Team: Focus group facilitators
- Task: Administer focus groups
- Purpose: Facilitators administer one focus group per region to capture information from the field.

Wednesday

- Team: Focus group facilitators and writer/editors
- Task: Debrief among facilitators, note takers, and the writer/editor
- Purpose: Resolve procedural issues and identify initial broad themes that emerge. Note takers complete analysis and summary.

Thursday

- Team: Focus group facilitators
- Task: Facilitator meeting
- Purpose: Develop focus group questions for the following week.

Thursday

- Team: Focus group facilitators and writer/editors
- Task: Content analysis and writing
- Purpose: Conduct a broad analysis of the data and identification of general themes for the weekly report.

Friday

- Team: Focus group facilitators and writer/editors
- Task: Writing and editing
- Purpose: The writer/editor leads the writing for the weekly report with assistance from the facilitators and note takers.

WEEK 2

Monday and Tuesday

- Team: Sensemaking
- Task: Sensemaking team analysis
- Purpose: Sensemaking team members analyze previous week's focus groups.

Tuesday

- Team: Writer/editors
- Task: Deliver weekly report to IOL director
- Purpose: Deadline for final edits and completion of weekly reports.

Wednesday

- Team: Sensemaking
- Task: Sensemaking team leader consolidates analysis
- Purpose: Consolidate and edit all individual team member analyses into one report

Thursday

- Team: IOL director
- Task: IOL director presentation to RMA

Friday

- Finalize weekly sensemaking report and deliver to director of IOL

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