TRAINING, TOOLS, AND RESOURCS TO SUPPORT EMERGENCY DECISION-MAKING BY PARK RANGERS

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ABSTRACT

This qualitative case study identifies specific training, tools, and resources (TTR) needed to support the emergency decision-making functions of park rangers employed by a state park system (SPS) in the United States. The case study explored the experiences and challenges faced by park rangers in their own words. Data collection consisted of an online focus group with six SPS managers and individual interviews with nine SPS park rangers. Data analysis revealed emergent themes in confidence, foundations, learning preferences, process, opportunities for improvement, and preparedness. The research findings indicate the need to develop and implement emergency decision-making TTR that meet the needs of park rangers. Specific recommendations to the SPS relate to training, tools, resources, and future planning efforts.

Keywords: analytical decision-making, intuitive decision-making, recognition-primed decision model

INTRODUCTION

Park rangers fulfill many roles and functions, including emergency planning and response, that require effective decision-making, often during emergencies under the pressures of time and consequence. Although specific duties vary, park rangers may plan for, manage, and respond to park emergencies such as search and rescue (SAR), essential life support, emergency medical services, law enforcement, and wildland firefighting (Beauchamp, 2020; Pennaz, 2017). For that reason, park rangers must have access to the training, tools, and resources (TTR) that support emergency decision-making. However, as Zhou et al. (2018) noted, training specifically focused on emergency decision-making is not part of the standard training requirements for park rangers across the United States.

In this article, we identify the necessary TTR to support the emergency decision-making functions of park rangers in the United States. We gleaned these insights through the experience and perceptions of those actively serving as park rangers employed by a U.S. state park system (SPS). The SPS is one of the oldest state park systems in the United States. It is one of five divisions of the state's Department of Natural Resources. The SPS employs over 1,600 people

and manages 61 state parks and historical sites encompassing 84,505 acres. Annual visitation exceeds 9.9 million, and the economic impact is over $1 billion.

SPS management consists of the director, chief of operations, assistant director, and numerous administrative and operational positions. Field operations are divided into six regions, and each region maintains a headquarters office with a regional manager and two administrative positions overseeing 15 parks and historic sites. The parks and historic sites have a manager, and some also have assistant managers. Additional staffing at those properties varies depending on the acreage, facilities, visitation, location, and other factors.

The SPS's mission statement emphasizes protecting the state's natural beauty and historic integrity while providing public enjoyment and educational opportunities. The SPS's vision statement focuses on using its diversity and commitment to excellence to provide quality service, resource protection, outdoor recreational opportunities, ecosystems management, and heritage interpretation. The SPS's SAR's team mission statement supports the overall mission and vision, focusing on preventative actions and managing active emergency operations that save lives and minimize suffering in an all-hazards environment. Effective emergency response is foundational to achieving the SPS mission and vision. Park ranger experience is considered a critical factor in providing effective emergency response; subsequently, the park ranger experience served as the foundation of this study.

The term "park ranger" refers to employees who wear the ranger uniform and hold the official titles of park manager, historic site manager, assistant manager, park ranger, maintenance ranger, or interpretive ranger. Park rangers within the SPS are responsible for administering, patrolling, interpreting, maintaining, responding, and protecting park resources across multiple sites statewide. In addition, the park rangers develop emergency response plans that address various park emergencies, including severe weather, SAR, cave rescue, firefighting, swift-water, and high-angle rescues in their emergency planning role. The senior management team administers and oversees these functions.

LITERATURE REVIEW

Although the emergency management literature covers many aspects of emergency decision-making and response, we focus on the primary elements of operational decision-making pertinent to park rangers. The literature review results use a conceptual structure (Torraco, 2016) to highlight numerous concepts important to emergency decision-making by park rangers. After introducing the topic, we discuss the emergency response roles of park rangers. Next, we examine decision-making contexts and decision-making styles, including analytical and intuitive techniques. This section reviews the recognition primed decision-making model and other principles and strategies.

According to Sinclair et al. (2012a), there seems to be a lack of substantive focus on state park rangers' emergency decision-making training for operational-level emergency management and response roles. This lack of training applies to rangers in their emergency management and response tasks, leading to a seeming disparity between the expectations placed on park rangers to

make critical decisions and the lack of available training in making those decisions (Federal Emergency Management Agency [FEMA], 2021). In this study, we recommend solutions to fill the gaps in the literature and the disparities in practice.

Park Ranger Emergency Management Roles

Park rangers have a long history dating back to the 1300s when the first rangers served as agents of the king of England. Those early park rangers were responsible for protecting the royal forests from poachers. In the United States, the advent of the National Park Service (NPS) in the late 1800s led to the first official hiring of a park ranger at Yellowstone National Park in 1880. Stephen Mather, the first director of the NPS, described the roles of NPS rangers:

> Though small in number, their influence is large. Many and long are the duties heaped upon their shoulders. If a trail is to be blazed, it is 'send a ranger.' If an animal is floundering in the snow, a ranger is sent to pull him out; if a bear is in the hotel, if a fire threatens a forest, if someone is to be saved, it is 'send a ranger.' If a Dude wants to know the why of Nature's ways, if a Sage brusher is puzzled about a road, his first thought is, 'ask a ranger.' (Albright & Taylor, 1928, Introduction, para. 3.)

Beauchamp (2020) referred to the many roles of NPS park rangers, such as firefighter, manager, conservationist, and protector. NPS rangers have a proud history of serving as medics, rescuers, and firefighters (Pennaz, 2017). The same applies to many state park rangers. Park rangers serve other emergency response roles, including establishing temporary emergency operation centers for large, complex incidents that last more than one operational period and converting state facilities to warming shelters during severe winter weather or overnight shelters for hurricane evacuees.

Decision-Making Context

Variations in the context within which park rangers operate will cause variations in their decision-making process. Park emergency operations' dynamic, high-stress environment affects decision-making (Paton, 2003). Park rangers must make timely decisions during both emergency planning before an incident and incident planning during or following an incident (Karagiannis & Synolakis, 2017). However, there is limited time for park rangers to consider possible options (Launder & Perry, 2014). The pressure increases because the public expects them to make good decisions and take appropriate actions in a timely manner. Therefore, park rangers could benefit from a framework on which to base their decisions (Boin & Hart, 2003).

Each park ranger's decision is essential and may have positive or negative impacts (Buchanan, 2011). Situational awareness is necessary for the emergency manager to prevent them from unknowingly sending a crew into a life-threatening situation. Using the most current information to support decisions and decrease risk is essential (Gaudard & Romerio, 2015). However, park rangers may be reluctant to make decisions with inaccurate or limited data (Karagiannis & Synolakis, 2017). Despite sound decision-making, incidents remain dynamic and constantly

evolving (National Fire Protection Association, 2016). The dynamic situations resulting from incident expansion and change call for different decision-making styles. Park rangers must make decisions in this high-stress, high-stakes environment, under the pressures of time and consequence (Launder & Perry, 2014). Thus, there is a need for a framework that simplifies and guides emergency decision-making under such dynamic and often kinetic conditions (Boin & Hart, 2003). The literature connects the dynamic nature of the emergency environment and the need for different decision-making styles.

Decision-Making Styles

Decision-making styles differ between the static environment of routine operations and the dynamic, kinetic environment of emergency response (Launder & Perry, 2014). Thus, two primary decision-making styles apply: analytical and intuitive. The analytical decision-making style lends itself to developing emergency plans and policies (Sinclair et al., 2012a). It relies on procedures, rules, and logic (Doyle et al., 2015). The intuitive decision-making style is based on the training and experience of the responder (Doyle et al., 2015; Lipshitz et al., 2001). Decisions are often made intuitively under emergency circumstances (Sinclair et al., 2012a). Park rangers must rely on their experience to make decisions during an emergency response. Karagiannis and Synolakis (2017) emphasized that decentralizing the decision-making process to allow field-level intuitive choices leads to greater success during incident responses.

Park rangers are responsible for the analytical decision-making required during routine operations and the intuitive decision-making needed during an incident response. Thus, empirically, there seems to be a need for training rangers to understand and effectively apply both styles (Doyle et al., 2015; Sinclair et al., 2012a).

Analytical Decision-Making

The routine operational environment requires a different decision-making approach from an active emergency response (Doyle et al., 2015; Launder & Perry, 2014). The context of routine operations allows for a thoughtful, analytical approach to decision-making. There is time to consider all possible options and select the best one. Analytical decision-making relies on logic, rules, procedures, and guidelines (Doyle et al., 2015). Thus, analytical decision-making is ideal for developing emergency response plans and policies (Sinclair et al., 2012a). Planning and policy development may be lengthy and complex, involving many stakeholders. Schwartz et al. (2019) insist that structured, collaborative, innovative, transparent decision-making processes will benefit the public agencies that employ park rangers. While planning and policy development are ideal for applying analytical decision-making, emergency response is not usually conducive to that level of analysis and consideration of options. Emergencies often require intuitive decision-making.

Intuitive Decision-Making

Intuitive decision-making, also referred to as naturalistic decision-making, focuses on the process by which to make experience-based decisions in the uncontrolled environment of the natural world (Klein & Wright, 2016). The emergency response environment is dynamic and disorderly, often requiring that decisions be made quickly and limiting the careful analysis of all possible options. Park rangers must be well-prepared to make sound decisions (Michel-Kerjan, 2015). In that environment, experience-based, intuitive decisions are usually most effective (Lipshitz et al., 2001).

Like other emergency managers, park rangers face substantial uncertainty. This uncertainty results in a great deal of pressure to make the right decisions, forcing them to draw from their experience to be successful (Doyle et al., 2015; Sinclair et al., 2012a). Factors that influence decisions in that dynamic environment are assessing the situation, choosing a strategy, setting objectives, deploying/managing resources, and constantly reviewing the situation (Launder & Perry, 2014). These factors provide a process or structure to guide decision-making. With that process in place, intuitive decision-makers appear better equipped to process new information and unfamiliar events (Haske et al., 2019). The recognition-primed decision (RPD) model expands upon the topic of intuitive decision-making.

Recognition-Primed Decision Model

Klein (2008) developed the recognition-primed decision (RPD) model in the 1980s. The RPD is a combination of intuitive and analytical decision-making. It proposes that people make decisions by applying their experience to recognize and react to patterns. Once people gain experience with the responses associated with specific patterns, they can use mental simulation to apply those responses to other situations in which the same patterns occur. Pattern recognition is an intuitive function, while mental simulation is a conscious, analytical function (Klein, 2008). For example, a park ranger from the coast who has experienced hurricanes and tidal flooding will have different experiences and patterns from which to draw than a park ranger who has experienced SAR in mountainous terrain. Still, either park ranger can mentally simulate what they have learned and apply it to the other situation. RPD facilitates swift decision-making without a lengthy process of considering options.

Decision-Making Principles and Strategies

Several constructs contribute to the framework of decision-making principles and strategies. Horita et al. (2018) referred to the dimensions and pillars of emergency decision-making. Dimensions are process-oriented components such as the phase of a disaster, the experience of the emergency manager, type of incident, and location of the incident. These will vary with each emergency. Conversely, the pillars are structural factors such as responder assignments, sources of data, the establishment of rules, and the acquisition of information. These will differ with each agency involved in the emergency response.

Decision-making within a system as complex as the emergency management system requires planning and management to ensure that the decision is defensible, transparent, and possesses a degree of social engagement (Schwartz et al., 2017). This means that park rangers must apply appropriate methods to gather the information necessary to guide their decisions. For example, it is essential to characterize the context in a widespread crisis, develop a system model, organize the established criteria, and assemble that information in a systematic, usable format (Kamissoko et al., 2014). Park rangers face the challenge of developing models and organizing the information systematically when the context and criteria differ for each emergency. Their ability to manage the influx of information affects the effectiveness of the emergency response. Response effectiveness improves when decisions are made based on current, real-time knowledge and awareness of the incident (Probert et al., 2018). Situational awareness based on the availability of accurate, timely information is essential to park rangers as they seek to lead a successful response (Klein et al., 2010). The availability of timely, accurate information forms the foundation of their situational awareness. Situational awareness combines teamwork, task management, and communication to develop the decision-making framework (Haske et al., 2019). Situational awareness helps the park ranger recognize commonalities and categorize information based on previous experience (Danial et al., 2019). As park rangers adapt to manage evolving circumstances, these decision-making principles and strategies serve as keys to developing resilience and public safety.

Schwartz et al. (2017) emphasized adaptive management by applying whichever decision-making framework best fits the current circumstances. Three examples are strategic foresight, structured decision-making, and evidence-based practice. Strategic foresight orients toward planning how to manage critical future uncertainties. Structured decision-making focuses on identifying the best steps to achieve the desired outcomes, again in the face of uncertainty, through consideration of consequences and tradeoffs. Finally, in evidence-based practice, park rangers make decisions quickly based on evidence of the past effectiveness of specific management interventions and assess how successfully they might apply it to the current situation.

In summary, park rangers perform in challenging circumstances to meet managerial and public expectations by making effective decisions. Even when vital information is available, there is still a high level of uncertainty associated with every decision. Along with that high level of uncertainty comes a high level of accountability. The RPD model provides an option to guide decision-making in these circumstances (Klein & Wright, 2016). Such an effective, efficient method for making decisions can significantly influence the success of emergency response (Huggins et al., 2015). This literature review reinforces the need for TTR to help park rangers consistently make better decisions and thereby ensure operational success.

METHODOLOGY

This qualitative case study identified the TTR that park rangers in the United States need to make decisions during a park emergency. We employed a case study design that provided a holistic, in-depth description of park ranger experiences shareable with other park ranger agencies

(Patton, 2015; Yin, 2018). The strength of a case study design is its ability to look at unique problems in a way that can reveal theoretical propositions (Yin, 2018). In this case, the unique problem was understanding the TTR that can help foster park rangers' emergency decision-making abilities. Park rangers and managers working within an SPS in the United States formed the target population for this study.

The purposive expert sample examined in this study consisted of 15 (n = 15) park rangers and managers, with 5 (n = 5) identifying as female and 10 (n = 10) identifying as male. The average years of professional park ranger experience was 11.6 years, with the lowest being 4 years and the highest being 33 years. To explore the perspectives of both agency managers and park rangers, the study utilized an online focus group with 6 (n = 6) managers and semi-structured interviews with 9 (n = 9) individual park rangers.

We employed non-probability purposive sampling, known as expert sampling, because the research study focused solely on the park rangers and managers (Corbin & Strauss, 2008; Patton, 2015). Each participant consented and took part in either a virtual recorded focus group or semi-structured interview utilizing a Zoom platform due to in-person COVID-19 restrictions. Semi-structured interviews encouraged participant reflexivity (Perera, 2020). Three industry experts reviewed the questionnaire script before the study. The experts agreed to review, scrutinize, and provide feedback to ensure the veracity of the semi-structured focus-group and semi-structured interview scripts. Each expert possessed an advanced degree and experience in emergency management and homeland security. The questionnaire scripts were edited based on the experts' feedback.

Before analyzing the data, we transcribed the recorded sessions, deleted the audio/video files, and removed any personally identifying information (PII) from the data to protect participant anonymity. The data analysis consisted of a hand-coding process that involved color-coding the data (Basit, 2003). The coding process involved highlighting emergent themes in different colors as they appeared throughout the transcripts. Hand-coding allowed each researcher to spend time reading the data, coding additional attributes, and taking notes (Basit, 2003; Corbin & Strauss, 2008). The researchers read and coded the data independently, allowing for comparisons and rigor. To ensure reliability and validity of the study findings, the researchers reviewed and verified the data analysis and coding, provided data saturation and triangulation, and compared the findings of each researcher for accuracy (Morse et al., 2002; Patton, 2015; Yin, 2018). Using inductive reasoning, the data analysis led to case descriptions employing a systematic, hierarchical approach (Coyne, 1984; Stake, 1995; Yin, 2018). The case descriptions represent themes in table format in the results section.

RESULTS

The data analysis and coding process revealed six emergent themes. Those themes were confidence, foundations, learning preferences, process, opportunities for improvement, and preparedness. Tables highlight each theme. The tables reflect the attributes that contributed to each theme and representative statements from park rangers and managers during the focus

group and semi-structured interviews. Ellipses and slash marks represent reduced amounts of text presented while attempting to maintain the integrity of the experiences shared by the participants.

Confidence

The first emergent theme was confidence. Three attributes converged to form the theme: becoming more comfortable with experience, situation-dependent, and lacking clarity/ uncertainty. The attributes and representative statements for confidence are in Table 1.

Table 1.   Confidence

Attributes	Representative Statements
Becoming more comfortable with experience	I've actually responded to each of those/after an amount of time and experience with it, it does become easier. At this time, I'm fairly comfortable with such. I mean, there are uneasy aspects of it but ... (Ranger participant Z11)
Situation dependent	... that is situation dependent for me ... (Ranger participant Z12)
	... so, I think it really comes to specific scenarios of my comfort level and obviously certain things I have a lot more experience in, therefore I'm a lot more comfortable in them/but I think once it started getting more complicated I would just very quickly like just not have some of the knowledge of some of the like deeper thinking for it. (Manager participant Z6)
Lack of clarity/uncertainty	But what I am often uncomfortable with is where ... my training ends, like where my protections end, and where it should be going to other emergency services ... (Ranger participant Z12)

Some park rangers' responses focused on becoming more comfortable making decisions during a park emergency as they gained experience over their career, while other park rangers' responses indicated that their comfort level in making decisions during a park emergency was situation dependent. Managers provided examples that supported the statements made by the park rangers. For example, Manager participant Z4 described a decision to call in outside resources due to a lack of experienced park staff, a decision that contributed to a successful response. Manager participant Z5 emphasized the importance of experience by sharing the successful evacuation by a highly experienced team in an unfamiliar situation. These statements substantiated the critical role experience plays in effective emergency decision-making (Horita et al., 2018). Some park rangers expressed a lack of clarity and uncertainty regarding roles, policies/procedures, and boundaries. Roles, policies, and procedures generally contribute to an established framework.

Foundations

The second emergent theme was foundations. Five attributes converged to form the theme: training, tools and resources, guidance and support, mentors, and operational change. The attributes and representative statements for foundations are in Table 2.

Table 2. Foundations

Attributes	Representative Statements
Training	I always tend to be a little bit reflective on things/I saw how past managers have dealt with situations/the Ranger training that we go through is a very helpful training/our emergency procedures guidelines depending on what the situation is/beyond that really, I just pull from my experience and how similar situations went in the past and what I could do better in the future. (Ranger participant Z11)
Tools and Resources	I am very, very aware of safety issues/so I really read my emergency preparedness binder and so that I feel like I'm prepared when something happens. (Ranger participant Z14)
Guidance and Support	You know my boss will commonly ask ... how it went/it's just good to know that you know that you have that support from your higher ups. (Manager participant Z6)
	I wouldn't hesitate to call a supervisor to kind of like say, like hey ... what would you do in this situation. (Manager participant Z7)
Mentors	I think that they must rely on their experience from there early in their career. (Manager participant Z2)
	I didn't have past experiences to pull from, but I had an awful lot of mentors. I had park managers all around me that had been on for 20 years so there was no shortage of people to learn from. (Manager participant Z5)
Operational Change	I kind of feel like prior when we were law enforcement you had the tools that you gained from the 12 or 21 weeks of training and as that's changed there, the tool is becoming their cell phone and calling 911 and getting the resources to them to respond to the emergency more and more. (Manager participant Z3)
	I think the, the use of the cell phone to reach out and ask for direction has become an invaluable tool that our park staff used/but I think a lot of our folks were young and straight out of college and they were only receiving what ... we give them. (Manager participant Z6)

Park rangers pointed out numerous TTRs, including a fundamental class, the emergency procedures manual, and personal reflection. TTRs support rangers whose experience might be lacking in certain areas (Karagiannis & Synolakis, 2017). Another resource, the availability and use of field-level mentors, was a focal point for both groups. One park ranger mentioned learning

from previous park managers. Comments from the managers about their mentors supported this. These constructs help to form the framework for this non-linear natural system (Laszlo & Krippner, 1998). To that end, a significant operational shift occurred when the managers served as park rangers: there were fewer highly experienced park managers to serve as mentors. As a result of this shift, park rangers look to their regional managers as a source from which to draw experience, as represented by Manager participant Z7. Stemming from the operational shift, manager and ranger participants noted a change in communications and response methods. These operational shifts are examples of non-linear, unpredictable change (Coetzee & van Niekerk, 2012; Sanial, 2014). They also represent the adaptiveness necessary for a natural system to thrive (Laszlo & Krippner, 1998).

Learning Preferences

The third emergent theme was learning preferences. Four attributes converged to form the theme: hands-on, combination, virtual, and combination approach. The attributes and representative statements for learning preferences are in Table 3. Learning preferences varied in the interviews. It is clear from the responses that learning is as important as the context of decision-making (Bartolucci & Gallo, 2015). Most park rangers pointed toward a hands-on approach or a combination of hands-on and classroom methods. Both Ranger participant Z14 and Manager participant Z6 recommended pre-work in addition to practical applications. Responses concerning virtual learning components were mixed. Comments from managers resembled the comments from park rangers.

Table 3.   Learning Preferences

Attributes	Representative Statements
Hands-on	In this regard, hands-on is the best way to do it. (Ranger participant Z11)
	I think a combination of classroom and practical was the best for me. (Ranger participant Z12)
Combination	I think that something that's more self-paced is more effective for a lot of us/ maybe Zoom meetings ... and then have a final half-day hands-on program … to bring all the information together. (Ranger participant Z14)
Virtual	I don't I don't see a virtual aspect of that being nearly as beneficial. (Ranger participant ZI1)
	I'll be open to some virtual training ... to kind of get things going until we are in a better place where we can do more hands-on training. (Manager participant Z7)
Combination Approach	I think you have to use a combination of all of those/It depends on what the topic is, and it depends on what you're teaching, what, with

Attributes	Representative Statements
	what is appropriate but the more hands on the better/I think that the more we can do hands-on, but there has to be some classroom, there has to be you know lectures and presentations. (Manager participant Z5)

Process

The fourth emergent theme was process. Five attributes converged to form the theme: personal liability, reporting process, communications, and organizational change. The attributes and representative statements for process are in Table 4. Park ranger responses were systems-oriented, centered on liability concerns, reporting, and communications technology. Park rangers with nearly a decade of experience expressed questions and concerns about the boundaries of their positions, the existence of any personal liability, and the incident/accident reporting process. From these responses, it is not clear whether the system parts—in this case, the framework of policies and procedures related to incident response and reporting—are effectively being applied by the park rangers (Frank et al., 2016).

Manager responses were more chaos-oriented, focusing on organizational change and communications challenges. Managers referenced the organization's makeup change over their careers and anticipated additional changes in the next few years. Managers also recognized the communication challenges present within the organization and were hopeful of mitigating those challenges. Managers must continue to look toward the future to understand and manage the changes that it will bring (Karagiannis & Synolakis, 2017; Sanial, 2014). Managers must recognize the gaps in the park rangers' understanding of personal liability and the reporting process. Identifying and considering those issues will be essential to planning for the uncertain future.

Table 4.   Processes

Attributes	Representative Statements
Personal Liability	But what I am often uncomfortable with is where…my protections end/I don't get a clear idea of are we first responders like police, fire, EMS and do we have the same legal protections should something go poorly. (Ranger participant ZI2)
	Where we do want to respond and make sure that we're giving the guests the best treatment and care, there's still that little bit of well what if I do something that I shouldn't? Is it going to come back on me? (Ranger participant ZI5)
Reporting Process	... oftentimes with like our reporting I feel like silly when I'm like OK so now the police are here but also can I have your name and

Attributes	Representative Statements
	address for an incident accident form that's not going to go anywhere. (Ranger participant ZI2)
	The hardest part for me is remembering which report to file. (Ranger participant ZI4)
Communications	... communication is/like horrible 'cause [sic] we have to hike back halfway up so we can get cell phone signal (Manager participant Z6).
Organizational Change	. . .when I first started . . .like a lot of people that come to work for us now, I didn't have past experiences to pull from, but I had an awful lot of mentors/fast forward 25 or more years later there's not this pool of mentors. (Manager participant Z5)
	Our business may change over the next three to five years where we have to offer something totally different. (Manager participant Z2)
Communications	a multitude of communication issues and, those still haven't been overcome yet, but they are, they're on my mind and we will get to them eventually. (Manager participant Z5)

Opportunities for Improvement

The fifth emergent theme was opportunities for improvement. Six attributes converged to form the theme: additional training, interagency relationships, emergency response manual, additional training, interagency relationships, and training program framework. The attributes and representative statements for opportunities for improvement are in Table 5. Both park rangers and managers addressed the importance of additional training, albeit from different perspectives. Park rangers recommended expanding training to cover a broader range of incidents, emphasizing updated policies and procedures and including more part-time staff. Managers focused on offering periodic supplemental training to reinforce the content in the primary training sessions. Both groups also focused on developing interagency relationships such as those that exist with local law enforcement, fire-rescue, and emergency medical services. The interdependent relationships with these agencies are crucial to successful park emergency response (Coetzee & van Niekerk, 2012). Thus, there appears to be a need and an opportunity for improved relations and combined training with these agencies.

One topic that the park rangers emphasized was the SPS emergency response manual. Many park rangers mentioned this resource as being critical to their decision-making. The challenge is that some of the park rangers' materials are disconnected, with separate documents existing in different locations. Park rangers recommend consolidation of the various resources related to emergency response. Managers must recognize this need to consolidate the numerous sources of information into one document or location.

The managers addressed the training program's framework, including setting priorities, establishing consistency, developing performance and training standards, and better applying the SPS learning management system. Echoed by others, Manager participant Z2 emphasized the

need to prioritize the development and provision of training opportunities for park rangers while recognizing that the SPS is responsible for accomplishing many other goals and objectives. When speaking about consistency, Manager participant Z6 referenced the previously robust SAR team and SAR training, an integral component of the SPS. Presently, operational changes have interrupted that component. Manager participants Z1 and Z6 pointed toward developing expected levels or standards of training to reestablish this level of consistency with training. The possibility exists for building it into the performance management process for the park rangers. This feedback might help establish the consistency needed for a robust training program while helping to prioritize training as a function for the SPS. In addition, Manager participant Z5 recognized the relatively untapped opportunity present within the electronic learning management system currently being utilized by the SPS. Proper use of this methodology could support the prioritization and consistency previously discussed.

Table 5.   Opportunities for Improvement

Attributes	Representative Statements
Additional Training	Developing multiple Ranger trainings of that nature to cover a wider range of incidents may … be helpful. (Ranger participant ZI1)
	… more training on the updates on things because I know policies change and the ways to handle things change/it's hard to remember them all. (Manager participant Z4)
	I'd like to see the part time staff be trained some too. (Manager participant Z4)
Interagency Relationships	I feel like it would be very beneficial for management when they come to a park to be introduced to the local EMS and the local Sheriff's Office so that we know who were calling and who's coming out to assist us, and for them to know who their park contact is. (Ranger participant Z15)
Emergency Response Manual	I think a more comprehensive manual would be really, really nice … little more all-inclusive. (Manager participant Z6)
Additional Training	… once you're through the [fundamental training] there needs to be some supplemental trainings along the way. (Manager participant Z2)
Interagency Relationships	… building those relationships, but maybe even having training opportunities with them as well … would be important. (Manager participant Z4)
Training Program Framework	… we have to make it a priority to say training is extremely important to us and we're going to do more of it. (Manager participant Z2)
	… it would benefit us over time … if we were consistent long-term with our training. (Manager participant Z6)

Attributes	Representative Statements
	I think about our performance evaluations/that foundation would be really good to build up for … consistency. (Manager participant Z1)
	I thought it could be helpful for … there to be expected training for certain positions. (Manager participant Z6)
	I think that the [learning management system] is a new and underutilized tool that you know we don't know the full capability of it, but I do think being able to use it more effectively … would be helpful. (Manager participant Z5)

Preparedness

The sixth emergent theme was preparedness. Three attributes converged to form the theme: advanced preparation, post-incident follow-up, and preparedness. The attributes and representative statements for preparedness are in Table 6. Preparation was essential to some park rangers. Individual techniques for achieving preparedness varied based on personal attributes and motivation. For instance, Ranger participants ZI4 and Z16 both like to read, so for them, general preparedness included reading and familiarization with emergency response guidelines and other documents. For Ranger participant ZI2, the focus was on individual mental and physical preparedness through physical fitness activities.

Post-incident follow-up was also a focal point, with individual preferences becoming apparent. For example, Manager participant Z6 described the need for relaxing and debriefing with the team following an incident and Ranger participant ZI1 expressed a tendency to reflect and learn from experiences to prepare for future incidents. Preparedness is an essential concern toward which park rangers apply considerable effort. Managers also recognized the importance of preparedness. Manager participant Z5 called preparedness a critical responsibility, citing the career ramifications for severely mishandling an incident. Managers rely on park rangers to represent the SPS well by making sound decisions. Additionally, manager participant Z6 pointed out that the public also looks to the park rangers to know what to do in an emergency. Therefore, preparedness is a priority for both managers and park rangers.

Table 6.   Preparedness

Attributes	Representative Samples
Advanced Preparation	I am very, very aware of safety issues and things that come up from things, so I really read my emergency preparedness binder and so that I feel like I'm prepared when something happens. (Ranger participant Z14)
	…. I like to read so like I read a lot of manuals. (Ranger participant Z16)

Attributes	Representative Samples
	I've really tried to do some kind of cardio so that when my heart rate heart rate spikes up, I'm not like throat closing, getting nervous, full of stress. (Ranger participant Z12)
Post-incident Follow-up	… you sort of had a debrief time after any sort of rescue where they just, you get a little time to kind of gather your thoughts and make sure that you know you're OK/we kind of build in time to like allow your staff, allow your rescuers to kind of like you know get off the edge 'cause … adrenaline is pumping and everything is kind of going, and just to kind of like settle back. (Ranger participant ZI6)
	Well, I mean I always tend to be a little bit reflective on things. (Ranger participant ZI1)
Preparedness	I think it's very important that they be nimble and know how to respond to these, these incidents/they have to be able to make good decisions because you know we're relying on them as, as leaders in this division to make solid decisions. (Manager participant Z2)
	I would consider it a critical responsibility. Even if you're doing everything else that, as far as your responsibilities go, correctly you can have one incident that you mis-handle and it can be a career ending situation. (Manager participant Z5)
	I think when something happens our guests reflexively look at whoever's in uniform for direction. (Manager participant Z6)

CONCLUSION

Decision-making TTR will enhance park ranger effectiveness in emergency response. By applying TTR, SPS agencies can reduce the disconnect between TTR and operational-level emergency managers, including park rangers (FEMA, 2021; Sinclair et al., 2012b). The findings of this study suggest that a lack of formal decision-making training represents a disparity in practice because of the expectation for park rangers to make critical decisions when planning for and responding to park emergencies. SPS agencies can reduce this disparity by training park rangers to apply the concepts of decision-making context, styles, principles, strategies, and the recognition-primed decision model.

In addition to formal decision-making training, park rangers also need additional TTR to support their decision-making in the areas of confidence, foundations, learning preferences, process, opportunities for improvement, and preparedness. The study participants' real-world, current experiences and perceptions provided insight into their underlying issues and needs. SPS agencies can better meet the park rangers' needs by customizing and prioritizing their training programs to address those areas of concern. Finally, SPS agencies need to plan for and manage future change. The recommendations section outlines TTRs specific to their needs while filling gaps in the emergency management literature on state park rangers and the lack of decision-making TTRs provided to park rangers.

LIMITATIONS

There are three overarching limitations associated with this qualitative case study. The first limitation involved the focus on a single SPS. One of the case study design strengths is its ability to conduct singularly focused case studies and glean usable, applicable information (Kennedy, 1979). However, the narrow focus makes it more difficult to analytically generalize the findings of this study to the broader field without further inquiries. The second is the reliance on the words and experiences of the participants. Again, as it is with the focus being on a single SPS, participant recall, personal bias, and opinions limit the generalization of the study. The third limitation involves the sample size, 15 (n = 15) participants. Qualitative and quantitative future studies utilizing different SPS agencies, to include a broader set of participants at the state and federal levels, are needed to expand the understanding of emergency decision-making TTR needs.

RECOMMENDATIONS

Examining the needs of park rangers for responding to park emergencies highlighted the importance of providing TTRs for park rangers. The findings of this case study provided a reasonable representation of a sample of rangers, their experiences, and their perceptions about emergency decision-making. Several recommendations resulted from the issues brought to light through this study. This study recommends expanding training, clarifying staff roles, refining the reporting process, consolidating emergency procedures, developing inter-agency relationships, ensuring post-incident follow-up, and establishing mentorship programs.

Training

Prioritize SPS agency training programs by expanding training opportunities that underscore policies and procedures for all staff, including part-time employees. Preferred training methods include a hands-on or combined approach that provides pre-requisite reading or online assignments before the hands-on session.

Provide training related to decision-making techniques and preferences by developing a course designed specifically for park rangers. Include a classroom component that focuses on decision-making concepts, including context, style, the recognition-primed model, principles, and strategies. Explain the contextual differences between routine and emergency operations that dictate the use of analytical or intuitive decision-making styles. Focus on the intuitive application of previous experiences by discussing the recognition-primed model. Engage students in a discussion about the importance of applying their cumulative knowledge, skills, and abilities in their current context.

The course should also include hands-on components that challenge park rangers to apply those concepts to a scenario or tabletop exercise. Challenge park rangers with a mock SAR exercise that begins with the report of a missing person. Replicate a domestic dispute in the park and have park rangers detail the steps to address it. Have park rangers develop an emergency pre-plan for their park. Debrief students after each exercise having them explain how they arrived at their

decisions and provide additional insights to guide future decisions. Design these and other hands-on components to support the classroom portion of the course.

Training Policies, Role Clarification, and Reporting

Clarify staff roles, boundaries, personal liability, and the incident reporting process related to emergency response through revised policies and direct communication at regional meetings. Some park rangers expressed uncertainty about where the end of their role and the roles of other emergency responders begin. They did not understand their place within the overall emergency management context. Other park rangers were concerned about their liability if they made a mistake when responding to a park emergency. Finally, the reporting process is complex and confusing for some park rangers. SPS agencies should present the reporting process and supporting documents through a simplified format such as a flowchart that can serve as a handy reference. In addition, the development of performance and training standards and more effective application of an SPS learning management system could enhance the consistency of the training program and support park ranger preparedness.

Tools and Resources

Tools and resources support park rangers when they are responding to park emergencies. These tools and resources are critical to successful decision-making. The SPS emergency procedures manual and related documents contain opportunities to consolidate and expand. SPS agencies should consolidate their emergency procedures manual and other similar documents in one place for the sake of efficiency. They should also consider expanding those documents to be more comprehensive, more along the lines of the documents utilized by NPS.

Inter-Agency Relationships

Inter-agency relationships at the park level need to be a priority. While this has historically been a park- or site-level initiative and expectation, park rangers and managers recognized the importance of establishing these relationships. It would be helpful if regional managers took a more proactive role in establishing these contacts. Finally, post-incident follow-up with rangers following an emergency response should remain a priority for SPS agencies. A high level of follow-up and support is well-recognized and appreciated by park rangers. That level of support should continue.

Future Planning

Consider the impacts of SPS organizational change over time, especially as that change relates to the availability of mentors and resources and the implementation of tools such as cellular phones. There is a shortage of field-level mentors compared to what existed in the past. The regional managers now serve the multiple roles of leader/manager/supervisor and mentor. SPS agencies should establish mentorship programs that connect new park rangers with more experienced park rangers.

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