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Fire and Rescue Services' Interaction with Private Forest Owners During Forest Fires in Sweden: The Incident Commanders' Perspective

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Abstract: Forest fires, i.e., wildfires, often cause an inevitable strain on society and human living conditions. Incident Commanders (IC) at the Fire and Rescue Services (FRS) are challenged to handle forest fires and at the same time address the forest owners' needs; this stipulates a need for collaboration, information, and communication. Hence, the aim of this study was to explore and describe the ICs' experiences and actions in their interactions with forest owners during forest fires on private property. Interviews were conducted and analyzed using Flanagan's Critical Incident Technique (CIT) to describe the experiences and actions of 22 ICs. The results showed that a firefighting operation needs clarity in information exchange with the forest owner as a stakeholder, not a victim. The trust between forest owner and IC accelerated the operational phase. The ICs demonstrate more care than the law stipulates, and they worry about the forest owners. Therefore, the FRS needs to form a strategic partnership with forest owners and their network on a local level. Also, future forest fire drills should not only include emergency stakeholders (i.e., police, ambulance, etc.) but also forest owners and local volunteer organizations. For a resilient community, FRS and forest owner collaboration is vital.

Keywords: cooperation; resilience; wildfire; critical incident technique; disaster



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1. Introduction

Forest fires, i.e., wildfires, are by definition a natural phenomenon. However, climate change results in more extreme heatwaves, and the seasonal window of forest fires is increasing [1–3]. Forest fires are devastating for nature and climate as they contribute significant greenhouse gases to the atmosphere [3]. Furthermore, a forest fire often causes an inevitable strain on society and human living conditions [4,5] and it can be a dramatic event. For a forest owner, experiencing a forest fire entails an economical and emotional shock, losing value that has been cared for, sometimes for generations [6–8].

At close to 28 million hectares (ha), Sweden's forest land covers 68% of the country's area [9], and of this, nearly 48% is privately owned. The average forest property is 27 ha, and many properties are jointly owned within families [10]. Today, forest fires in Sweden are mostly found and extinguished quickly due to the density of highroads and to proximity to the Fire and Rescue Service (FRS). From 1996 to 2020, occurrences of large forest fires were infrequent; annually, 270 forest fires grew beyond 0.5 ha and 63 of them larger than 100 ha [11]. The FRS disaster management system is run by 290 autonomous municipalities,

for whom the issue of how to organize the FRS is free of choice and conducted in various ways, with responsibility regulated under the Civil Protection Act [12]. There is no special forest fire fighting system in Sweden, and full-time firefighters are located mostly in urban areas, while rural areas are mostly dependent on part-time firefighters [13]. The FRS operates in different sized areas, although most of the municipalities are small; the median municipality population is 16,300, and 25% have a population density ≤ 10 inhabitants/km². In other Nordic countries, forest fires are regulated in a similar way, though Norway has specifically noted in legislation that collaboration with forest owners among other stakeholders is necessary [14]. In Sweden, forest fires are to be handled according to the legal principles of responsibility, closeness, and equality; this means that forest fires are to be handled within the normal fire and rescue service organization as much as possible, as regulated by law (LEH, 2006). If a forest fire is too extensive, the FRS will be supported by aerial and decision support from the Swedish Civil Contingencies Agency (MSB). According to Swedish legislation, every FRS is obligated to have one firefighter in the role of incident commander (IC) in every operation. The role is performed by those who have special training for the position, and each FRS has several firefighters with this level of education. The IC has the overall mandate to assess and manage the operation close to the situational area, a complex task that requires high levels of communication [12,15]; in addition, their ability to assess and decide is critical for a successful operation [16]. The IC has extensive authority, including a right to claim necessary resources or to order anyone to assist in using private machinery or as additional personnel in the firefighting organization [12].

In pressing times, when many forest fires are burning simultaneously, the FRS's need for help is vital. Forest owners and their local networks have proven to be an asset, but at the same time, managing these additional resources has been complicated. Forest owners and local networks have shown to be decision-prone, i.e., not waiting for resources and even engaging in firefighting before the FRS arrives, regardless of the danger [6,17]. This raises questions of who is responsible for human safety and machinery [18,19].

When the FRS is leaving the extinguished fire area, the responsibility is handed back to the forest owner, who is by law obligated to monitor the post-fire area to ensure that no fires flare up again. If the forest owner is not capable, the IC assigns the monitoring to another stakeholder designated by the FRS, at the expense of the forest owner [12]. For the forest owner, this responsibility is an additional strain at an already distressing time, as a forest fire can lead to psychological trauma [7,18,20–22]. Moreover, this responsibility is sometimes impossible for a single forest owner to manage, particularly when monitoring of the burned area lasts for days or weeks, which necessitates additional help and resources that the forest owner must organize.

The unpredictability of forest fires poses challenges for the ICs when they assess needs, and collaboration, information, and communication are required [4,18,23]. The IC plays the central role during forest fires, handling both the ongoing management and decision-making as well as the forest owner and local volunteer network, whose first priority is to assist affected family and neighbors [18]. However, the interactions between ICs and forest owners are a little-explored area, and the IC is the central figure. By comprehending the ICs' experiences and actions, it becomes possible to find new ways of collaborating, thereby enabling more effective management of forest fires. Hence, the aim of this study was to explore and describe ICs' experiences and actions in their interactions with forest owners during forest fires on private property.

2. Materials and Methods

This study followed an inductive descriptive and retrospective design, using Flanagan's Critical Incident Technique (CIT) [24], a technique developed to study behaviors. A critical incident is described as a situation with a well-defined beginning and end that generates an experience and/or an action. The situation, because of its retrospective character, can only be determined as critical afterwards, i.e., distinct from an everyday event [25]. By exploring and identifying experiences and actions that arise from significant situations,

the researcher reveals how the participants handled the critical incident [25]. In this study, the critical incident was defined as the IC's interaction with a forest owner from the first contact, throughout the firefighting phase, up to the handover of responsibility to the forest owner, along with eventual contact afterwards. All steps throughout this process contained several critical incidents, describing significant experiences and actions.

2.1. Setting

The Swedish population is approximately 10.5 million [26], of whom approximately 300,000 are private forest owners [27]. The area for this study was the southern region Götaland, one of three regions in Sweden (Figure 1). This region has more than 127,000 private forest owners [10]. There are approximately 80 FRS (out of approximately 200 in Sweden) within the 140 municipalities of Götaland. Out of these, two-thirds are operated by individual municipalities, while the remainder are managed through associations between two or more municipalities.



Figure 1. Map of borders of municipalities in Götaland, Sweden.

2.2. Participants and Data Collection

The inclusion criteria for this study involved ICs who had participated in a firefighting operation on private property in Götaland for which the fire area was >0.5 ha and where interaction with the forest owner had occurred in person, with a designated stand-in for the forest owner, or via telephone. The exclusion criteria were ICs who had participated in firefighting operations for forest fires that had occurred in forests owned by the state, by the Swedish church forest management, or by corporate forest-owning entities.

Participants were identified using purposive sampling [28] from a list of FRSs in Götaland, and their contact information was found on home pages. Invitations to the chief fire officer were sent continuously to 27 FRSs within the study area in order to find a diversity in participants from different geographical locations and from varying organizations. Each chief fire officer signed their approval to conduct the study, and they informed their ICs. Those interested in participating received an information letter via e-mail, including a consent form, and were then followed up with a phone call to answer any questions. The participants were urged to think about between one and three forest fires during which they had interacted with a private forest owner up to the date set for the interview and were reminded to sign and e-mail back the consent form to the first author. Each interview addressed several critical incident situations involving interactions between the IC and the forest owner [24]. The search for participants ended when the research

team ascertained that the collected critical incidents had rendered a manageable number of experiences and actions.

Out of the 27 FRS asked, a total of 22 ICs from 13 FRSs engaged in the study, with a range in terms of gender, time in the role of IC, and experiences with forest fires. The ICs had extensive experiences, with nearly half having participated as IC in more than 20 forest firefighting operations in the role of IC (Table 1). After their interview, participants were asked to share the information letter with other potential participants in their organization or in other FRSs within Götaland.

Table 1. Socio-demographic and professional characteristics of ICs included in the study (n = 22).

Gender	Number of Participants
Male	19
Female	3
Age	Years
Youngest	31
Oldest	62
Years Working in the Role of IC	Years
≤10	5
11–20	12
≥21	5
Number of Forest Fires in the Role of IC	Number of Participants
≤10	8
11–20	4
≥21	10

The data were collected in 2023 using semi-structured interviews, which were held and recorded in video conference software. The definition “critical incident” was not used during the interviews; instead, the participants were encouraged to describe a memorable situation of involving an interaction with a forest owner during a forest fire on private property. Each interview began with structured sociodemographic questions followed by open-ended questions from a standardized CIT interview guide by Fridlund, Henricson, and Mårtensson [25] that were modified to suit the aim of the study (Table 2). This guide was meant to help the participant to thoroughly discuss every critical incident remembered. In order to clarify and obtain a richer understanding, follow-up questions were asked, such as “Can you please tell me more about ...”.

Table 2. Description of the nine critical incident technique (CIT) interview questions according to Fridlund, Henricson, and Mårtensson [25].

Interview Questions
1 Where did you meet the forest owner?
2 Can you describe it to me in detail?
3 Why do you remember this particular occasion?
4 What did you do when you talked to each other?
5 What was your attitude/mood like?
6 What were you thinking during and after you finished your communication?
7 How did you feel during and after your meeting?
8 What were the most demanding aspects of the meeting with the forest owner?
9 What does the event mean to you in retrospect?

A pilot interview was held to evaluate the interview guide and the interview technique, after which the guide was slightly modified. Nevertheless, the pilot interview was included in the analysis because it contained important details and did not diverge from the interviews that utilized the modified interview guide.

The interviews lasted between 22 and 80 min, for a total of 883 interview minutes. The 141 critical incidents found in the gathered material comprised 425 experiences and 227 actions, adding up to 652 in total.

2.3. Data Analysis

The interviews describing experiences and actions of interactions with forest owners, from the IC perspective, were transcribed verbatim and then read through several times for familiarization with the material. Experiences and actions from interactions between the IC and the forest owner during forest fires on private property were extracted and subjected to a structural analysis, where experiences and actions were analyzed separately [24,25]. The process of analysis was the same for both experiences and actions. The entire research team was actively engaged in the analysis process, working collaboratively to scrutinize and organize the data to find the right wording for each label in order to reach consensus at each analysis level, ensuring a solid anchoring in the data. When challenges emerged, the researchers returned to the transcribed interviews to gain a coherent understanding of the text, and they selected the analysis structure that best matched the data. At the descriptive level, similar experiences were grouped together into 21 sub-categories based on the compiled quotations. Similar sub-categories were grouped and abstracted, combining five categories. Finally, the categories were abstracted into two main areas. The analysis strictly followed Fridlund et al.’s model [25], i.e., a separation was maintained between experiences and actions, and no search was conducted for connections between them. However, it was important to distinguish what exactly were the experiences and actions, separately, that were included in the critical incident. Actions were grouped into fifteen sub-categories, four categories and two main areas. See Figure 2 for an example of the analysis process.

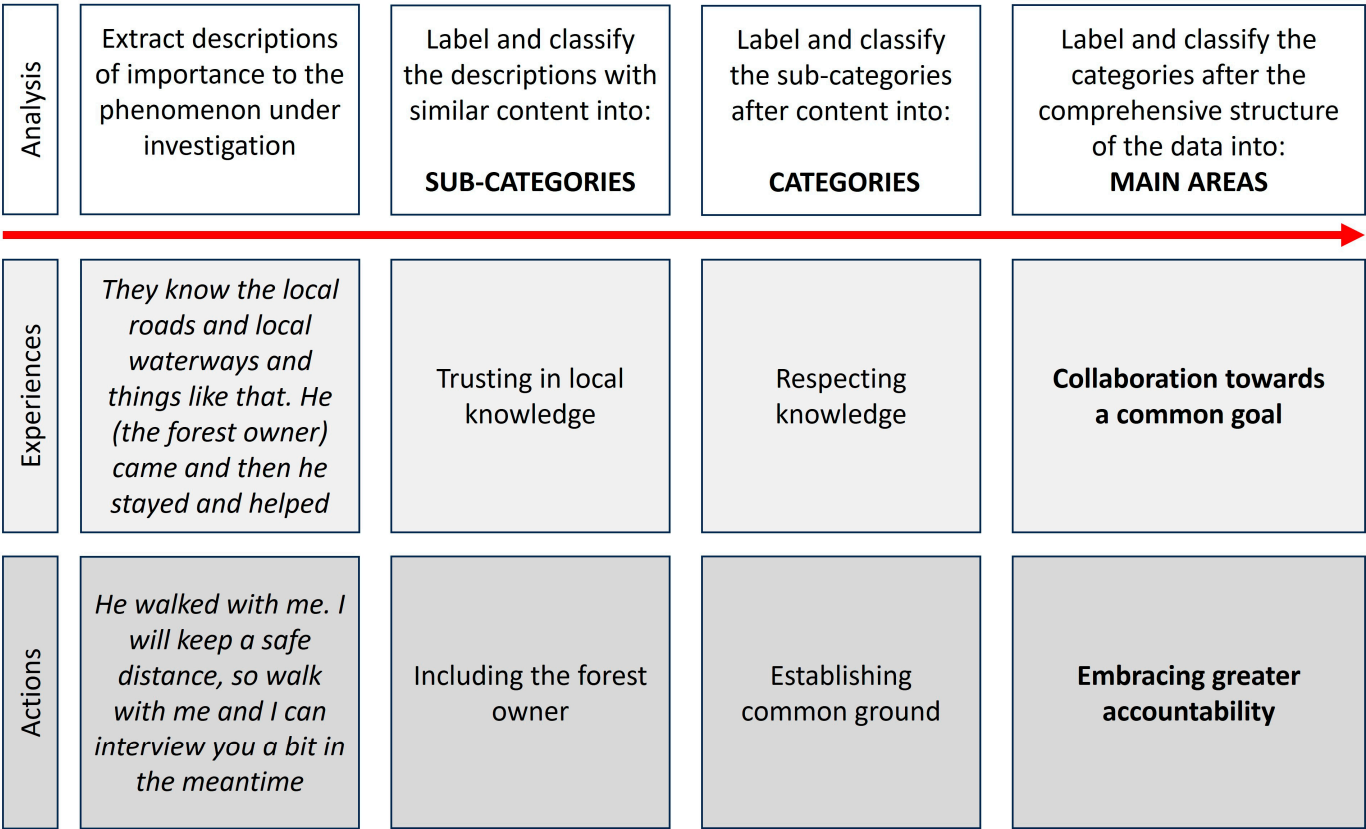


Figure 2. The CIT model with an example of extracting of experiences from transcribed text to main area.

2.4. Ethical Considerations

The World Medical Association (WMA)'s Declaration of Helsinki was considered, where the risks and burdens for the participants were balanced with the research, and ethical, legal, and regulatory norms were addressed [29]. An ethical self-review according to the Ethical Advisory Board in Southeast Sweden found that the study did not require ethical approval. Participation in the study was voluntary and participants were informed via written and verbal information and consent that they could withdraw at any time. All data were handled confidentially by withholding names and places, revealing details, and naming organizations.

3. Results

3.1. Experiences

The ICs' experiences in interaction with forest owners during a forest fire on private property were described in two main areas: Collaboration towards a common goal, and Mutual dialogue for success (Table 3).

Table 3. An overview of sub-categories (with the number of experiences in brackets), categories, and main areas of ICs' experiences in interactions with forest owners during forest fires on private property.

Sub-Category (n)	Category	Main Area
Comforting knowledge (34) Feeling safe with the forest owner (17) Relieving network (35) Feeling safe with external resources (27)	Conveying trust and security	Collaboration towards a common goal
Prioritizing contact (16) Experiencing a positive meeting (25) Including the forest owner (15) Trusting in local knowledge (19)	Respecting knowledge	
Seeing the forest owner's worries (27) Caring for the forest owner (24) Assisting with responsibility (18)	Addressing needs	
Being calm (16) Creating understanding (20) Benefiting from mutual dialogue (18) Seeing the common goal (14) Reaching mutual understanding (24)	Responsibilizing communication	Mutual dialogue for success
Handling unpredictable aspects (17) Worrying about the forest owner (10) Feeling inadequate (9) Frustrating dialogue (30) Making the right decision (10)	Dealing with a complex situation	

3.1.1. Collaboration Towards a Common Goal

Collaboration towards a common goal describes the ICs' need to connect with the forest owner to access vital information for firefighting strategies, which was achieved in a positive meeting while seeing and caring for the forest owner.

Conveying Trust and Security

The ICs' experiences of interactions with forest owners were described as a comfort in that the ICs were able to access vital information provided by the forest owner, where trust was the foundation of this collaboration. The ICs relied on the forest owner's knowledge, a dynamic that created security, since the forest owner was seen as an expert of the surroundings and therefore an important resource. This knowledge was reassuring when the FRS was ready to end the operation and hand back the responsibility to the forest owner.

The ICs experienced forest owners and local networks to have more drive and knowledge than others, which brought a level of trust not commonly seen in other emergencies.

"I always feel that it is extremely valuable when I encounter an expert who I can meet and shake hands with. I don't want to let go of that hand because I will need him."

The ICs also expressed relief concerning the unexpected help and network, as one IC explained:

"We need all the help we can get, because we don't have enough people to deal with forest fires. We must have these voluntary resources to support us."

Furthermore, the ICs experienced a sense of security when the necessary resources were provided, especially if they had previously been lacking. Additionally, the handover of responsibility back to the forest owner for monitoring was facilitated by the volunteer network, which assisted in meeting the forest owner's needs, thereby providing relief.

Respecting Knowledge

The ICs' experiences of interactions with forest owners were described as meeting a need to gain quick contact with the forest owner. The ICs emphasized the importance of prompt contact because accessible information from the forest owners was helpful in operational decisions, and knowledge about the terrain minimized risks for the firefighters. Rapid contact was also important because it was perceived as helpful for the forest owner to prepare for the upcoming monitoring responsibilities. The ICs experienced their collaboration with forest owners as mostly positive and easy, characterized by a willingness to cooperate, and that most forest owners understood that there was a shared responsibility to manage the firefighting and the monitoring of the burned area afterwards.

"There is such commitment, it doesn't matter whether you're an auto mechanic or a manure spreader or whatever, as long as people ... as long as we help each other. That was probably the strongest thing for me."

The ICs experience was that all help was valuable, and therefore they wanted to include the forest owner. They achieved this by making a rapid assessment of what assignment the forest owner could be trusted with. However, when the IC arrived, sometimes the forest owner would already be in full firefighting action, and if this was the case, all involved parties continued in a natural collaborative manner. The ICs saw the forest owner as an asset who contributed to shortening the time the FRS needed to stay at the site, as one IC explained:

"We might even be able to work in parallel, so that we can address the area where the fire is still spreading, while the forest owner can focus on monitoring the post-fire area, where the FRS is judged not to be needed. We can work in parallel with each other."

The ICs put trust in local knowledge regarding roads, accessible trails, ground level differences, and access to water to be able to plan the firefighting operation. Local knowledge was found to be a significant asset; the forest owner knew their forest best and therefore was crucial in planning for the best outcome of the firefighting operation.

Addressing Needs

The ICs' experiences of interactions with forest owners were described as being aware of the forest owner's worries related to the stressful situation, from both an economic and emotional perspective. This aroused a need to bring comfort, whether the forest owner was taking part in the firefighting or was at home. Also, in handing over responsibility, the ICs wished to reassure the forest owner and minimize any fear regarding the upcoming responsibility.

"He doesn't quite understand at first. He's afraid that we'll leave, that he'll ... he envisages that he'll need a fire truck and hoses. I explain that it's not the case."

The ICs cared for the forest owners, both during and after the forest firefighting operation, and wanted to create a sustainable situation for both, demonstrating a strong will to help. The ICs experienced that calling or visiting the forest owner after the forest fire was important and this effort of caring was perceived with gratitude.

"I might go out a few days later to talk to the forest owner. And that I can check how he has actually experienced everything."

In their willingness to help, the ICs did more than was necessary, beyond what was stipulated by law, and never left the forest owner until the conditions were manageable.

"Be humble. Listen to the forest owner . . . sometimes you might need to be a little flexible with things, to make them work well."

3.1.2. Mutual Dialogue for Success

Mutual dialogue for success describes the ICs' wish to communicate a common goal by being calm and to achieve mutual understanding. Worrying about the forest owner was accompanied by feelings of inadequacy and worrying about making the right decision.

Responsibilizing Communication

The ICs' experiences of interactions with forest owners were described as responsabilizing communication with the forest owner using a calm approach while being objective and professional, even before the operational plan became clear to the IC. This communication was vital when assessing the forest owners' opportunities to contribute to the situation, as well as what the forest owner needed before handing over responsibility. The ICs tried to create understanding through clear and empathetic dialogue, something that took time, which the ICs did not always have. On the one hand, when facing time pressure, they would sometimes have to forcefully instruct the forest owner. On the other hand, the ICs wanted to be clear about how their work was progressing to create understanding of how and why decisions were made and found that this was easier if the forest owner was close by, and if the ICs used open dialogue. The ICs experienced that lack of time to connect with the forest owner was aggravating because the most positive outcomes were reached when they had time to connect. When this did not happen, more FRS resources were needed.

"But if we fail to disseminate the information and fail to get them to take responsibility, it falls back on us in the end. So, even though we shouldn't do it, we adapt. The capable ones take over more quickly, while those who lack ability, we assist for longer."

Communicating with the forest owner to establish a common goal was vital. This was done repeatedly inviting them to gatherings where they had the chance to discuss and reach a mutual understanding. These meetings were also seen as an opportunity to assess the forest owners' potential contributions.

"We were on the same level. He cared about his forest, and yes, we were working towards the same goal. It was his forest, his property, and his money that disappeared, and I wanted to extinguish this and do my job as well as I could, so we connected quickly and easily."

Further, to strengthen communication, written information was given to the forest owner which the ICs perceived as rendering trust and thankfulness in return.

Dealing with a Complex Situation

The ICs' experiences of interactions with forest owners were described as unpredictable, both from an organizational aspect and in the actions of the forest owners and local networks. The firefighters and the forest owners, as well as the local network, saw the need to act, which increased the risk of injuries. Having either too strong a will to act or an unwillingness to help added stress to the situation.

"Then it probably took six hours before I met the other forest owner up there, north of the fire, and by then he had done a lot of things that I wasn't aware of."

The ICs worried about the forest owner's health and security when engaged in fire-fighting, especially when the forest owner had a greater willingness to help than capability, which could lead to health issues. Additionally, the forest owner's knowledge about how a forest fire behaves was unclear, possibly putting the forest owner at risk.

"It can indeed be positive, but it can also be negative, because it's a workplace issue in the sense that there's a risk that people who might not be accustomed to fires end up in the direction of the fire or where there's smoke that can, quite honestly, lead to loss of life."

The ICs had feelings of inadequacy due to being unable to handle the planning of the operation while simultaneously taking care of the forest owner, particularly when the fire needed to be prioritized. This leading to a risk of putting themselves at risk in the suppression of the forest fire.

"We FRS personnel underestimate the risk of forest fires, I would say. We drive very close; we go too far on poor roads and think that 'this will work out'. And the farmers also believe they can handle it."

The ICs also experienced frustration in the dialogue when trying to explain to forest owners that they had responsibilities and would need to prepare for the FRS departure. Some encountered forest owners who lacked an understanding of the law and the responsibilities that come with owning a property, and those not living on the property were more unwilling to help and more likely to neglect their responsibility, demanding that the FRS solve the situation. The ICs noted the difficulties of making the right decision regarding when to end the firefighting operation:

"And it's always difficult, it doesn't matter if it's a forest fire or a house fire or whatever it is, to say that it's extinguished now. It's among the most challenging things for ICs; they always want some form of continuous monitoring."

The decision depended on whether the monitoring afterwards felt safe. Preventing the spread of the forest fire was the ultimate objective, but when handing over responsibility, knowing whether the forest owner could handle the situation was a difficult question to assess.

3.2. Actions

The ICs' actions in their interactions with forest owners during a forest fire on private property were described in two main areas: Collaborating for the best outcome and Embracing greater accountability (Table 4).

Table 4. An overview of sub-categories (with the number of actions in brackets), categories, and main areas of ICs' actions during interaction with forest owners during forest fires on private property.

Sub-Category (n)	Category	Main Area
Contacting the forest owner (23) Asking about the area (15) Asking for help (9) Accepting help (7)	Creating a relationship	Collaborating for the best outcome
Convey security and control (16) Acting with care (17) Prolonging contact (16)	Caring for the forest owner	
Avoiding misunderstanding (28) Planning ahead (18) Leaving resources (10)	Dealing with uncertainties	Embracing greater accountability
Reaching out with information (7) Including the forest owner (19) Including through practical work (11) Discussing a common picture (19) Encouraging networking (12)	Establishing common ground	

3.2.1. Collaborating for the Best Outcome

The ICs highlighted the importance of collaborating for the best outcome in their efforts to create a relationship built on caring and mutual understanding. The forest fire was a taxing and unusual situation for all those involved, and establishing common ground was the basis for communication and success.

Creating a Relationship

The ICs' actions while interacting with forest owners were described as establishing contact with the forest owner, either by phone or in person when the forest owner showed up. In some cases, it took a long time to get hold of the forest owner, or the forest owner was occupied with the firefighting without the IC knowing. Asking the forest owner about the area was vital because local knowledge was essential for the firefighting operation.

"We want to get in touch with the forest owner as soon as possible to find out what type of roads there are. What is the accessibility like?"

The ICs asked for help, relying on the fact that the forest owner had contacts and resources needed in the firefighting operation. The help offered by forest owners was accepted with the mutual understanding that the greatest need was to obtain resources to control the forest fire.

"Together, we find out where we can obtain forestry machinery so that we can start creating firebreaks, understand what forest is important, and identify which areas we can protect as a last resort, so to speak, and what can actually burn."

Caring for the Forest Owner

The ICs' actions while interacting with forest owners were described as a strive to convey security and control to the forest owner by explaining thoroughly what was happening and what to expect, both during the firefighting operation and after the FRS had left. The ICs acted to make the forest owner feel safe and seen. It was important not to neglect the forest owners' needs, as one IC explained:

"It is important not ignore [the forest owner]. Even if I assess that there might not be any danger, I still need to show an interest that they are there, because I might also need them."

It was common among the ICs to decide to extend their help for those in need, doing more than required in caring for the forest owner, a situation explained by one IC:

"It ended with, well, we'll continue to monitor [the fire] until it's out. We let him be old."

In such cases, the ICs prolonged contact with the forest owner to make sure that everything was under control. Even though the firefighting phase had passed, and the responsibility was officially handed over to the forest owner, the ICs supported the forest owner in their joint mission to prevent a new forest fire.

"And perhaps make a call during the evening just to check how things are going. Even though the firefighting phase has passed, there is still ... a concern that it shouldn't flare up again."

3.2.2. Embracing Greater Accountability

Embracing greater accountability describes the ICs' efforts during an uncertain event that requires communication to establish a common ground. Collaboration led to preparations, whereby the forest owners arranged a network to stand by for monitoring.

Dealing with Uncertainties

The ICs' actions while interacting with forest owners were described as avoiding misunderstanding through communication, which they achieved through dialogue about what was being done, thereby connecting with the forest owner. At the same time, the

ICs wanted to avoid forcefully instructing the forest owner with the support of laws and regulations, but they did take that approach if necessary. To enable forward planning, the forest owners were brought up to speed on what was expected. Meanwhile, the ICs assessed the forest owners' capabilities and designed a plan for handing over responsibility. The ICs always assured the forest owners that the FRS was just a phone call away.

"I'm constantly trying to think about whether he will have control over this. How will he manage this handover? By asking questions and the more you meet with them, the more a picture emerges of how you think it will go."

The ICs helped the forest owners with resources that might be needed to make the monitoring of the post-fire area possible. This was also a way of making things easier if the FRS needed to come back to carry out additional suppression. However, the ICs stressed that the responsibility was the forest owner's and that they needed to do the planning and monitoring themselves.

"By allowing the hose to remain, I could ensure that he had water and that he would feel comfortable about the monitoring by allowing the hose to remain".

Establishing Common Ground

The ICs' actions while interacting with forest owners were described as striving to reach the forest owner with information that was essential for their security and responsibility. Keeping the forest owner close and up to date facilitated this communication in various ways, for instance, by showing them the fire area or having a conversation over coffee about the firefighting process.

"He actually walked with me. I said that I would keep a safe distance, so he could come with me and I could discuss things with him at the same time."

When possible, forest owners were included in practical work by being assigned a manageable task based on their capabilities. Decisions were made together and were based on the forest owners' expertise, creating a common picture to facilitate understanding between the FRS and the forest owner.

"Yes, he was there to support us when we brought out the maps. In this situation, when we presented a worst-case scenario, he was also involved a little in the decisions. He was like my, well, advisor really."

The ICs encouraged the forest owners to contact their networks to arrange help in the monitoring phase, asking friends and family if they could assist.

"I see that within a few hours we can leave in our vehicles. And I explain to the forest owner that we are now activating those who are coming to help with the monitoring."

4. Discussion

4.1. Discussion of Method

In terms of methodological considerations in qualitative research, a researcher must consider the credibility, dependability, confirmability, and transferability of the study to attain trustworthiness [30]. The CIT method has evolved since its origin in the Aviation Psychology program of the United States Army Air Forces during and after World War II, and it has proven useful in many fields, such as medicine, learning, education, marketing, and emergency services [31,32]. The credibility of this study was strengthened by doing a pilot interview to evaluate the interview guide and technique and make adequate adaptations. The interview guide was another tool that ensured that all interviews are exploring the same phenomenon [24]. Using purposeful sampling that targeted ICs with experiences of forest fires also enhanced the study's credibility. The information power of the sample size was considered sufficient due to the rich and relevant interview material and the study's narrow aim [25].

The participants varied in their work experience with different types of forest fires, which strengthened the dependability of the study. In addition, at the researchers' request,

the forest fires considered were chosen by the participants. They chose situations that were clear to them and which they found memorable on a detailed level; this ensured the reliability of their memories of the situations [24]. An identified risk was that the participants may have wanted to only describe situations with constructive encounters with forest owners, demonstrating the positive side of the FRS. To avoid this, the participants were asked for diverse situations and most gave two or more forest fires containing interactions with forest owners, one positive and one negative in some way, not only about the forest owner but also their own efforts in the operation. Another way of decreasing this risk would have been to ask the participants to describe situations with specific positive and negative outcomes; however, the literature recommends not limiting the participants' choice of situation by leading them in such way [25]. Therefore, our method also strengthened the confirmability of the study.

The researchers possessed extensive experience with CIT and formed an interdisciplinary team. All were actively engaged in the analysis process, working collaboratively to examine and organize the data as well as to confirm the results at each stage; this strengthened the study's confirmability. Additionally, the research team members, as the instrument of the analysis, were transparent about their pre-understandings throughout the entire process to avoid bias.

Consensus was reached among the researchers on the categories and the main areas that emerged, ensuring that the analysis was solidly grounded in the data. When challenges or differing perspectives emerged, the researchers revisited the transcribed interviews to gain a thorough understanding of the text, and they selected the most appropriate codes that best aligned with the data. The results are assumed to be potentially transferable to interaction between ICs and volunteers in other disaster contexts, though more qualitative studies would need to be conducted to confirm this assumption [33].

4.2. Discussion of Findings

The discussion is based on the valuable findings of the interactions between the IC and forest owner, focusing on the value of the forest owner as an important stakeholder and collaborator and on the empowerment process towards them taking over the responsibility upon the withdrawal of the FRS.

Meeting people in different stressful situations is in line with the role of ICs, and a forest fire is no exception. To feel safe in a forest fire operation, the IC wants the forest owner at hand, both as somebody with whom to discuss the area and as a contact for resources [34,35]. The IC must leave their comfort zone in the normal chain of command and explore all possibilities through their interactions with the forest owner and the network they bring. The IC must see the forest owner and their network as potential help; however, this can also bring stress regarding being listened to, along with handling and organizing the potential help. This is equivalent to cooperation with volunteers at other disasters, for which research has shown that volunteers arrive both in organized groups and as individuals, and handling these volunteers has been shown to be tricky and time-consuming [34–36]. In Sweden, large forest fires have experienced large groups of volunteers arriving, which has often been complicated to handle and is not something for which the Swedish FRS has strategies [37].

Research has shown that volunteers risk getting harmed or harming others in their willingness to help [19,36,38,39]. Previous work has also revealed that communicating the severity and danger is a problem which manifests in people not wanting to leave their homes and tending to wait too long to evacuate [34,40]. This study shows that forest owners who arrive on site often bring machinery and personnel and go into action to physically stop the forest fire. The responsibility of these forest owners acting on their own, sometimes for a long time without the IC knowing, creates a grey zone. This entails danger, as forest owners work without proper clothing or knowledge about forest fire behavior. In order to minimize the risks, the IC includes the forest owner in operational planning, keeping them close by for reference; in this way, they make sure that forest owners come to no harm. Accordingly, the need for a calm approach is essential to creating viable interaction. For the

IC, the forest owner is essential because of their knowledge of the area, knowledge that is required to make decisions that move the operation forward.

The IC feels burdened by the responsibility when it comes to decisions regarding the end of the operation, i.e., knowing that it is safe to leave and to hand over the monitoring responsibility to the forest owner. This multi-level decision is dependent on, among other things, the forest owner, their capabilities, the weather report, and the combustible composition of the forest. Making this decision involves several supporting steps [41]. However, assessing the forest owners' capability to take on the responsibility of monitoring to ensure the fire does not flare up again is a human aspect that is important, time-consuming, and dependent on personal reflection—all responsibilities for the IC.

ICs want to build relationships through communication by having the forest owner nearby. When civilians affected by disaster are pushed aside to wait, are excluded from the common goal, and do not understand what is happening, this risks undermining trust in public authority [6,42,43]. Therefore, the IC must build a relationship with the forest owner as quickly as possible. In an "ordinary" accident, e.g., a traffic accident, the emergency stakeholders are known and the civilians who need help cannot contribute significantly to the management of the operation. By contrast, in a forest fire, interaction with civilian stakeholders is required, specifically the forest owners' knowledge and their possible contribution to the ongoing firefighting operation. The forest owner is usually not physically harmed and has the potential to provide vital insights about the forest and to help with physical tasks, including stopping traffic or bringing machinery and water. Furthermore, the IC is more familiar with leading operations in urban settings than in unknown forests, and therefore they need the forest owner's help. This finding has been supported in other studies showing that local support and knowledge is vital to effective decision-making [44].

The IC feeling safe and trusting the forest owner is a way to reduce stress and thereby facilitate making more level-headed decisions that are beneficial to the operation. However, to access this feeling of trust and security, the IC must trust the forest owner's capabilities and use them wisely. At the same time, if the IC over-estimates the forest owner's capabilities, accidents can happen. Research has shown that it is beneficial for volunteers to help and thereby convert their negative emotions into positive action [45]. While this study highlights the complexities of integrating forest owners and their networks into the command chain, it is nevertheless crucial to acknowledge the importance of their assistance, despite the additional stress it may cause.

To avoid misunderstandings and to reduce risk, the IC's dialogues must be clear and communicated repeatedly to establish a relationship with the forest owner and their network. It should be noted that the information comprehension becomes more difficult for the forest owner due to the stress and pressure of the disaster [6,17]. The timeframe is also a concern, as it takes time to keep clear dialogue running, something that is experienced as challenging in pressurized times. This study shows that it is nonetheless worth the time for the IC, who wants the forest owner to be as prepared as possible for the handover of responsibility. Therefore, helping the forest owner with supplies is mutually beneficial for the FRS and the forest owner in the upcoming monitoring phase.

The local network provided by the forest owner is perceived as important to the IC; when used, it shortens the timeframe of the forest fire, as other research has also found [46–48]. The IC represents an official authority where the will to create understanding is strong and expected, and clear professional communication is required to achieve this. Still, if necessary, the IC can forcefully instruct the forest owner and local volunteers at site to maintain a safe environment and can prepare the forest owner for the upcoming responsibility of monitoring. Unfortunately, this can create a rift between the IC and the forest owner, damaging the trust that may have built up during the operation and risking a loss of the common goal. This finding is supported in other research showing that in disasters, clear and reoccurring information is vital, and if it is absent, information is sought elsewhere, thereby undermining authority and trust [43,49–51].

The IC facilitates communication by showing the forest owner the fire area and discussing the progression of fire extinction, finding ways to give information to the forest owner. This is a way of getting to know the forest owner's capabilities and to make sure that information gets through. When the forest owner acts counterproductively to security, the IC must take responsibility [6]. The unpredictability of forest owners engaging in fire suppression without the IC's knowledge, thereby putting themselves in harm's way, causes stress. This has also been shown in other studies, which show that forest owners and people in general are decision-prone in forest fires or other disasters and will not wait around for help: the IC has to keep this reality in mind [6,17,39].

The IC can feel inadequate due to stress and a lack of equipment. This leads to risky behavior in operational decision-making where accessibility to vital information is crucial for firefighters' safety in the forest. Therefore, the safety aspect to letting the forest owner be part of the decision-making both establishes trust and operates a stress release for the IC. Other emergency situations where this kind of collaboration has shown to be fruitful is in the Swedish organization Missing People Sweden, where volunteers help the police in the search for missing people on a basis of confidence and trust that has evolved over time [52,53].

What further strengthens the relationship is that the IC wants to be perceived as caring about the forest owner, and they show this through their willingness to share information and by addressing the responsibility of monitoring that the forest owner will soon be facing. This caring is also shown through their prolonged contact with the forest owner after the firefighting phase has passed. This is an extension of the created relationship, an experience shared between the IC and the forest owner, and a way to debrief the events together; thus, it is more than just checking to see that the fire does not flare up again. The key is trust of and respect for the forest owner. The IC does this from the very beginning, when trying to find the forest owner is an early vital task, to include the forest owner in the process. The ICs also express that the meeting with the forest owner is mainly positive, and they perceive forest owners as more than normal citizens: they are a resource to count on. A positive meeting involving clear communication has already proven to be beneficial, as argued by Uhnoo and Persson [43] and Waldman et al. [39].

During the ongoing operation, the IC sees the forest owner's worries about the economic and emotional disaster. This leads to a desire to extend help to insurance company communication and to find opportunities to ease the burden. The IC encourages the forest owner to accept the help of their local network, and if this network is non-existent, the IC steps in. Showing this kind of goodwill is essential for a positive outcome after the firefighting phase has ended, as highlighted by the IC, but it is also a way of taking care of the forest owner. This is a two-part strategy of the IC; first, to take care of the forest owner and provide them the best possible way to handle the monitoring, and second, give the FRS a better starting point should they need to come back for additional fire suppression.

5. Conclusions

The collaboration and information exchange between Incident Commanders (ICs) and forest owners are crucial to the success of firefighting operations on private forest property. Far from being passive victims, forest owners are seen as key stakeholders, contributing valuable local knowledge that is essential for both operational decision-making and successful handover of monitoring responsibilities after the firefighting operation.

The relationship between ICs and forest owners is vital to obtaining essential information, ensuring successful operations, and facilitating the handover of responsibility for monitoring. In forest fires, the IC needs the forest owner as much as the forest owner needs the IC; therefore, building a foundation of trust and mutual respect is essential to facilitating effective collaboration. This trust accelerates the operational phase by utilizing the local networks and resources provided by forest owners while also alleviating pressure on the FRS by incorporating their assistance, which can shorten the duration of firefight-

ing efforts. Trust and respect form the foundation of the IC–forest owner relationship, extending collaboration beyond the firefighting phase to longer-term interactions.

The IC's care for the forest owner, driven by a genuine desire to help, is significant both during and after the firefighting operation. Recognizing the humanity of the forest owner and the economic and emotional burdens imposed by the fire extends the IC's care beyond legal requirements. At the same time, the willingness of forest owners to act, often without the knowledge or coordination of the IC, continues to present a significant challenge and can lead to hazardous situations. Without a well-established proactive communication structure and network at a local level between the FRS and forest owners, these issues will persist.

This research implicates that future forest fire drills should include not only emergency stakeholders but also forest owners and local volunteer organizations. In order to create a resilient local community, the FRS needs to establish pre-disaster collaboration with forest owners, working together to build mutual trust and respect. This approach would enhance operational effectiveness and foster a proactive, resilient firefighting strategy that benefits the individual IC, the FRS as an organization, and the communities they serve. The findings suggest that FRSs must establish formal relationships and build networks with forest owners, recognizing them as stakeholders and valuable assets in preparing for future forest fires. In a changing climate, establishing strategic partnerships for future forest fires will benefit all parties involved.

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