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The Mental Health of Oiled Wildlife Responders Deployed to the MV Rena Oil Spill in Aotearoa, New Zealand

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Abstract

Objective: To investigate the mental health impacts and coping mechanisms faced by trained oiled wildlife responders who deployed to the 2011 MV Rena oil spill, Aotearoa, New Zealand, following the vessel's grounding on Astrolabe reef.

Methods: A thematic analysis of in-depth semi-structured interviews was conducted with 8 core wildlife responders based on the following questions: What challenges are faced by trained oiled wildlife responders when managing oiled wildlife, within the oil spill response work environment, and how do oiled wildlife response agencies promote and protect the mental health of responders?

Results: Participants demonstrated a high commitment to utilizing their expertise for wildlife rehabilitation. While they accepted euthanasia as necessary, they experienced more intense emotions to mass mortality events and accidental deaths in the wildlife facility. Responders employed informal coping mechanisms, relying heavily on social connectedness and teamwork for support but reported insufficient training in trauma management and limited formal debriefing opportunities. Many depended on previous experiences to cope with the psychological challenges encountered and relied on strong professional identity.

Conclusion: The findings highlight the need to integrate primary prevention mental health training into oil spill response. This should specifically focus on mental health support, stress management, and resilience development.

Introduction

On October 5, 2011, the Marine Vessel Rena struck Astrolabe Reef, 12 nautical miles from Tauranga, Aotearoa, New Zealand (AC-2011-000158-NZL), resulting in what would become the country's worst maritime environmental disaster. The incident severely impacted wildlife, with 428 live seabirds admitted for treatment at the Te Maunga Oiled Wildlife Facility and 2063 dead birds collected. Maritime New Zealand activated a full oil spill response[1] and deployed the National Oiled Wildlife Response Team.[2] Post-Rena research has covered diverse areas, including veterinary care,[2,3] environmental impact,[4,5] and community response.[6] However, the emotional toll on wildlife responders remained largely unexplored.

Oiled wildlife responders face significant psychological risks in their demanding roles. In Aotearoa, New Zealand, they comprise a specialized subset of first responders,[7] including wildlife veterinarians, technicians, nurses, and husbandry specialists. They operate in a contentious field, with debates on efficacy, cost, and conservation value,[8] but play a vital role in rescue and rehabilitation efforts.[4,9] Although skilled in wildlife care, they may have limited experience with large-scale responses and the complex emotional demands of oil spill situations. As a result, these responders risk experiencing compassion fatigue, burnout, moral distress, and vicarious trauma, which can impact their work, the animals they care for, and their personal lives during and after a response, similar to other first responders.[10]

First responders face significant mental health risks during disaster response, with 10% to 30% exhibiting symptoms of posttraumatic stress disorder.[11–13] This risk is particularly elevated for those without formal medical or previous disaster response training, who often constitute a substantial proportion of early response teams.[14,15] Oil spills can pose an even greater psychological challenge than natural hazards[16] because they are a hybrid disaster combining human error with system failures.[10,17–20] Their human-caused nature intensifies their emotional impact,[10,17] as responders witness extensive damage to wildlife, people and communities.[21,22]

Defining resilience remains complex with ongoing debate defining the elements that form it. Resilience can be described as the ability to adapt to adversity and still experience positive emotions.[23] Research has shown that first responders demonstrate resilience in the face of trauma, with approximately 50% of people exposed to traumatic events displaying positive

adaptation.[11,24,25] This resilience is strongly associated with social support systems and effective debriefing strategies[11] and training cited as a protective measure.[23] Yet, these crucial protective factors remain understudied in responders[26] and not reported in oiled wildlife response. Recent research has highlighted the importance of emotional preparedness[27] and team connectedness[28] in disaster response, but current training continues to prioritize technical skills over mental health strategies.[29] Studies have suggested that embedding peer support and proactive communication and debriefing training could help manage compassion fatigue and burnout.[30,31] These training practices if undertaken consistently with scheduled revalidation training could also prevent skill decay, a phenomenon reported in technical skill training.[32]

Limited information exists on stressors affecting wildlife responders' mental health and their experiences of compassion fatigue, compassion satisfaction, moral distress, or resilience.[21,33,34] While recent quantitative research has highlighted stress and burnout among wildlife responders,[34] there remains a need to explore responders' lived experiences.[35] This gap in understanding becomes increasingly critical as oil spill incidents rise due to intensified shipping, marine transport activities,[36] and climatic changes, necessitating a shift from reactive response approaches to proactive primary prevention mental health strategies. Understanding these aspects is crucial for protecting and promoting the mental health of wildlife responders in future incidents, particularly as their services become more necessary in an environment of increasing disaster frequency and severity due to climate and environmental changes.[37]

While the official review of the Rena oil response included examination of wildlife care,[1] it overlooked the mental health impacts on the core team of wildlife professionals. Therefore, this study explores the lived experiences of wildlife responders during the Rena response, addressing three key questions: (1) What challenges are faced by trained oiled wildlife responders when managing oiled wildlife? (2) What challenges are faced by trained oiled wildlife responders within the oil spill response work environment? And (3) How do oiled wildlife response agencies promote and protect the mental health of responders?

Methods

This qualitative study employed an interpretive lens and inductive approach to explore the lived experiences of wildlife responders during the 2011 Rena oil spill. Through purposive sampling via professional networks, 8 participants were recruited who met specific criteria: (1) Trained animal care professionals with veterinary or wildlife rehabilitation qualifications; (2) 5 or more years of experience in wildlife rehabilitation; and/or (3) part of the wildlife response team network. The participant group comprised 3 wildlife rehabilitators, 3 wildlife veterinarians, a wildlife nurse, and a response specialist. Four participants identified as male and 4 identified as female. All participants brought extensive professional experience, ranging from 10 to 40 years in the field. Seven participants were members of or affiliated with the National Oiled Wildlife Response Team, and 1 was an international response manager contracted specifically for the Rena response.

Data collection occurred through semi-structured interviews conducted in late 2021, either face-to-face or via Zoom™. These interviews, lasting between 50 and 75 minutes, were digitally recorded and transcribed verbatim. The analysis followed Braun and Clarke's[38] phases of thematic analysis: (1) Data familiarization through active reading; (2) initial code production; (3) collation of codes into thematic groupings; and (4) theme refinement and definition. Non-verbal cues and body language were documented through reflection notes and integrated into the analysis.[39]

The study's ethical considerations were addressed through approval from Massey University Human Ethics Committee (21/41). Participant anonymity was maintained through pseudonyms and secure data storage. The first author's position as an insider researcher who attended the Rena event offered unique advantages in building rapport and understanding shared experiences. To mitigate potential response bias, pre-prepared interview schedules and redirection techniques were employed.[39] Verbatim transcription maintained a clear representation of participants' experiences, and pre-prepared prompt cues provided consistency across the interviews. It was also made clear at the outset of the interview that this was to reflect participant experiences not the primary researcher. Personal reflection was undertaken after every interview and discussed with the other researchers during post interview debriefing. Each participant reviewed their transcript before signing transcript release form to indicate their agreement that the words were captured in a way that reflected them.

Participants were provided with information and support resources, acknowledging the potentially emotional nature of their experiences.

Theme 1: Mixed Emotional Responses to Emergency Deployment

The initial theme emerging from the analysis revealed that wildlife responders experienced mixed emotional responses when deployed under emergency management protocols. While predominantly positive, these responses ranged from excitement and anticipation to uncertainty and trepidation.

Six of the eight participants expressed excitement about deployment, viewing it as an opportunity to utilize their professional expertise. For instance, Ian characterized the experiences as "a good high" and "a buzz," finding particular satisfaction in being recognized for his technical capabilities. This sentiment of professional validation was evident in his reference to receiving a "reward from recognition."

The prospect of participating in a rare wildlife response event in Aotearoa, New Zealand, generated notable enthusiasm among responders. Ross articulated this excitement vividly:

> I am available. I have done some training. Please pick me. Within 24 hours, I had a 'Yes, come up here,' and I was absolutely excited. I don't have a bucket list, but if I had a bucket list, an oil spill rescue would probably be at the top [*laughter*]. So, for me, it was an opportunity [*pauses*] to be involved in something.

Despite uncertainty about the situation's scope, Ross maintained his positive outlook:

> But I had no idea of the scale or anything else, which wouldn't have changed my willingness to attend. But it was like there something is going on, and I have an opportunity to attend. This may only even come once in my lifetime, let's do this!

The 2 wildlife veterinarians with oil spill training and senior responder roles exhibited more complex emotional responses. While sharing the general excitement, they expressed greater apprehension about the deployment. Gabe's initial response revealed this duality:

> Initially, I remember a period of denial, thinking, 'Mmm, it probably won't be that bad'[*long pause*]. So, it was difficult. I didn't really understand the scale or what we were heading off to at the time, some trepidation of course,

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or we were heading off for that long, or anything like that, or how many birds would be affected by it.

Participants consistently viewed deployment as a meaningful opportunity to apply their expertise toward improving outcomes for affected wildlife. This aligns with other research suggesting that contributing to a critical incident can be positively reinforcing to one's own mental health.[40] Olly, the most experienced responder, emphasized the importance of utilizing his skills:

[I was] excited and keen to use skills I have to make a difference. When I found out I was going, I was excited. I always am. I feel like I have a certain set of skills, and when there's something happening. I feel like I have the skills to be able to help them make it better. So, I was excited to go and started thinking immediately about what we would do or what I would need to take and things like that.

The sense of purpose and contribution emerged as a significant motivator across participants' accounts. For Orla, this manifested as a combination of professional duty and team connection:

It is my job to be involved in wildlife, so I am fulfilling what [employer] is paying me for. Because I also have such a strong connection with the Massey University wildlife team, there was a feeling of being connected and being a part of something the team was doing, or [*pauses*] doing my bit! Contributing, rather than sitting in an office from a distance.

The urgency of deployment added to the emotional intensity of the experience, as illustrated by Yasmin's account:

We were at work, and I can't remember who told us, but it was like, 'You're getting on a plane in two hours.' So, we did the quick run home, chuck some clothes in a bag, and turn up to the airport, which I found quite exciting. It was a new experience, something different.

Participants' responses reflected a complex interplay of professional commitment and emotional investment. While excitement and anticipation dominated their initial reactions, these were often tempered by awareness of the challenges ahead. The opportunity to contribute meaningful expertise to a significant wildlife response event was an important motivating factor, superseding concerns about deployment uncertainties.

Theme 2: The Impact of Animal Death on Responders

Participants' experiences with animal death during the Rena response showed up in 3 distinct ways, each evoking different emotional reactions and coping mechanisms. The context of how animals died influenced the way participants processed and responded to these deaths.

Participants spoke of accepting euthanasia as a necessary component of wildlife response, mainly due to their professional backgrounds and previous exposure. They viewed euthanasia as a means of providing relief and mercy in emergency situations. As Ross explained:

I accepted [death by euthanasia], I accepted death, as my view [is that] these birds died cared for, not left on a beach to rot or be predated, either as alive or dying or dead. So, that tells me that everyone has done their bit as much as they can. They are not saying, 'We don't care, we don't value you, so I won't bother.' Everyone was very invested.

This acceptance was particularly evident among those with extensive professional experience. Ian articulated:

I grew up on a farm, and I know you've got livestock, you've got deadstock. When you've got a disaster like Rena [*pauses*], you're going to get a lot more of it. And I suppose one of the things I did struggle with initially when rehabilitating birds was the kind of coming to grips that you can't save them all, right? And there are some that you can't save because you can't, and you don't have the resource to, and that's probably a sad one and probably hard to deal with. But there are those that are beyond rehabilitation, and death is a mercy for them, and a good death is a mercy for them.

However, even experienced professionals acknowledged the emotional complexity of euthanasia decisions. For Orla, a senior veterinarian, the process triggered memories of early career challenges:

You make an assessment. You do or don't decide to euthanise with the information you have at the time, and if you do decide to go ahead, that is what you do. Yeah, so you do a logical progression where euthanasia becomes the appropriate end. It is still not without emotion.

During the response, participants also reported feeling more emotionally challenged when negotiating tasks and processes with inexperienced volunteers who wanted more direct contact with animals or became confrontational when response decisions did not align with their expectations. The complex and unpredictable nature of disaster response, combined with remote work conditions and limited resources, further impacted responders' mental well-being and depleted their emotional resources.

In contrast to euthanasia, mass mortality events evoked stronger and more lasting emotional responses among participants. Even a decade later, many participants remained emotionally affected when recalling these experiences. Ross's poignant observation captured this impact:

There was a big albatross about the size of a person. I don't know the correct name for it, and it was dead [*pauses*]. I saw it, and I thought, 'We have killed [it] and all these other birds, this massive giant of the sky.' That really brought it home to me, more so than other things that the impact of the oil spill had done. These were only the found and seen victims. These are not the ones that have never been found or were predated upon and the suf-fering [*emphasis added*], God the suffering they had been through. We had absolutely polluted their environment, and it was an avoidable accident [*long pause*]. When I saw that bird, it was the only time I cried at Rena [*long pause, tearful*].

Even those who self-identified as resilient to death found the scale overwhelming. As Gabe reflected:

The scale of the deaths, particularly in this case, of the birds that were found dead, was actually overwhelming sometimes. And then needing to shift it to focus on the ones that we did have and trying to do the best for the ones that we had, was the way that I coped. There was always that little voice in my head saying, 'What about the ones you can't get to?'

Accidental deaths within the facility emerged as the most challenging experiences for participants to process emotionally. These deaths, often perceived as preventable, resulted in lasting feelings of guilt and distress. As Olly noted:

The ones that stand out for me are the ones where I have made a mistake or didn't anticipate something.

The emotional impact of these incidents remained significant even years later. Gabe's reflection on a specific incident demonstrated this lasting effect:

I still get flashbacks from the accidental deaths in captivity of the birds. There was one little blue that got caught under the ramp we made, and he drowned. I STILL feel that it is STILL raw in my mind, even 10 years out.

Participants attempted to find meaning in these losses through learning opportunities. Ian explained this coping mechanism:

It means that the death wasn't necessarily a complete waste. Yeah, there is some learning that has been able to take place.

The findings highlight that while wildlife responders developed professional explanations to cope with euthanasia, they were less prepared to manage the emotional impact of mass mortality events and accidental deaths.

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Theme 3: Mental Health Support, Informal Coping Mechanisms, and Team Dynamics

While participants recognized mental health support as crucial during the Rena oil spill response, they also shared that formal support structures were notably absent. Instead, responders relied primarily on informal coping strategies and team dynamics to manage their psychological wellbeing.

Participants consistently reported a lack of structured mental health support during the response, often acknowledging this gap with noticeable discomfort through nervous laughter or careful phrasing. This hesitancy appeared rooted in the historical context of veterinary and animal care professions, where discussions of mental health were traditionally uncommon. Beth specifically mentioned how predeployment training had failed to address crucial psychological aspects of response work:

> I don't think it was something we really discussed prior to going to an oil spill. It was not something I ever remember having in our fortnightly tutorial, was the reality of a major incident. And what that actually means *[long pause]* like mass mortalities.

The absence of formal support was officially recognized in post-response evaluations, as noted by Gabe:

> It [managing mental health] was one of the things that we identified in the in-house debrief as one of the things that we felt we didn't do particularly well.

All participants identified the lack of formal debriefing opportunities and trauma management training as a significant gap in organizational support structures.

Despite the lack of formal structures, responders developed and implemented various informal coping strategies. An example was the intentional use of positive animal interactions as a coping mechanism. As described by Gabe:

> The other thing I should mention is that we had a policy that if anyone was getting overwhelmed or anything like that, we would take them down to watch the penguins swim for half an hour, and that actually proved to be very useful. It was good therapy, and it reminded of the reason that we were doing it all. So, swim time with the penguins was good.

Camaraderie and team cohesion were seen as primary sources of psychological support. Participants consistently identified teamwork and shared experiences as crucial elements in managing stress and maintaining mental wellbeing during the response. The development of strong team dynamics was particularly valued by Gabe:

> We had a whole group of people who were part of the core team at the facility and worked really well together.

While participants generally felt they managed the psychological and emotional challenges effectively through these informal mechanisms, they unanimously acknowledged the need for more structured support in future responses. While participants successfully developed informal support networks and coping strategies through team bonding and regular check-ins, they consistently emphasized the need for these practices to be formalized in future responses. This is consistent with research that suggests that training cushions negative events and being experienced is a protective factor.[23] Beth noted that mental health support was done in a "superficial" way, with no coverage of these critical aspects in predeployment training. The reliance on informal coping strategies, while functional, highlighted a significant gap in response planning and preparedness regarding mental health support for wildlife responders.

Discussion

While previous disaster response research typically focuses on technical skills,[32] the current study revealed three key themes about responder mental health: the impact of oil response on mental health, the unique challenges of witnessing animal death in this context, and the current lack of comprehensive mental health support and strategies.

Understanding and preparing for responders' emotional responses is critical for successful response work. Participants conveyed a range of emotions when discussing their perceptions and reactions to notification and deployment, initially expressing anticipation and excitement. However, these emotions shifted as they encountered the reality of disaster response, particularly when working with inexperienced volunteers. This emotional trajectory aligns with existing research on novel deployment experiences[41] which indicated that people with minimal frontline experience could have limited experiences to draw from, lessening their ability to manage their emotions adequately.[24,41]

Findings showed participants had little understanding of the overall response beyond the initial deployment phase, leaving them feeling emotionally underprepared. However, they reported that prior exposure to traumatic events, training, and work-related experiences as animal care professionals had provided some insight and expectations. This reflects recent research emphasizing the importance of emotional preparedness as part of emergency response, taking a more proactive approach.[42]

The emotional toll on wildlife responders during the Rena oil spill highlighted the significance of the human-animal bond in this context. While there is substantial literature on euthanasia stress in veterinary practice,[43,44] the emotional impact on wildlife responders responsible for recovering or euthanizing wildlife remains unclear. Notably, participants experienced more intense emotional responses to mass mortality events and accidental deaths in the facility than to necessary euthanasia decisions.

The human-caused nature of the disaster appeared to intensify emotional responses, consistent with previous research suggesting that human-induced hazard events are more emotionally debilitating than environmental hazards.[10,17,20] Participants expressed particular distress regarding the scale of avoidable deaths in the wild, while facility-based accidental deaths, though fewer in number, evoked stronger emotional responses. This phenomenon differed from the expected impact of euthanasia stress, suggesting that Rena wildlife responders adapted to euthanasia through coping mechanisms, resilience, and strong professional identity.

Although participants did not explicitly mention resilience, their narratives demonstrated strong evidence of coping and resilience development. Social connectedness emerged as a crucial protective factor, with participants formulating their own support techniques through unstructured but consistent check-ins, particularly after challenging circumstances. This aligns with research indicating that responders who recognize social bonding and social support as necessary when dealing with difficult circumstances may achieve a more positive response experience and have improved mental health in these contexts.[26]

In addition, the intense feelings of camaraderie proved vital in disaster response when working toward a common goal.[35] While elements of collective trauma can affect the entire group and increase distress,[28] bonding and camaraderie enhanced the experience positively for the Rena wildlife team. This finding supports recent research emphasizing the importance of emotional connectedness in disaster response settings.[42]

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The findings highlight the need for a comprehensive approach to mental health support in oil spill response with an emphasis on primary prevention strategies. Current training for animal care professionals and first responders predominantly focuses on technical skills rather than emotional preparedness and coping strategies.[32,45,46] While findings demonstrated resilience and coping mechanisms, and playing a critical role seemed a protective factor,[40] this may not be adequate to address future increases in oil spills and global climatic events without targeted training across the response cycle.

Mental health support should be integrated into all phases of oil spill response preparedness training[34,47] and should comprise pre, during, and post deployment strategies. This includes developing emotional preparedness skills, formal and informal debriefing techniques, and strategies for supporting both experienced responders and volunteers. Such integration would help ensure sustainable, positive mental health outcomes for wildlife responders while enhancing their capacity to provide adequate care to the wildlife victims.

Limitations

To our knowledge, this was the first study that examined the lived experiences of wildlife responders in Aotearoa, New Zealand, about the impact on their mental health and wellbeing after dealing with disasters. While the study provides valuable insights into the experiences of wildlife responders during the Rena oil spill, several limitations should be acknowledged. While the qualitative methodology allowed for rich, detailed data collection through in-depth interviews with eight participants, this small sample size may limit the generalizability of findings to the broader response population and their transferability to other settings or contexts. The study's retrospective nature, with interviews conducted a decade after the incident, introduces potential recall bias, and the challenges of recruiting participants have limitations in capturing diverse responder views such as gender and other professional backgrounds. Participants' recollections of events and experiences may have been influenced by time, with time perspective potentially acting as a protective measure against trauma.[48] Future research conducted immediately post-response would be valuable in capturing responders' immediate experiences and emotional responses. This could be integrated into response policy and practice and part of the demobilization and restoration process.

Conclusion

As environmental disasters become more frequent and complex, protecting mental health of oiled wildlife responders requires systemic change beyond individual resilience and self-help approaches. While personal experience and resources contribute to coping capacity, this research demonstrates that animal care responders remain vulnerable to emotional stress, particularly during mass mortality events and accidental deaths. A comprehensive approach that considers the entire response cycle will better position responders and agencies to manage the complex challenges inherent in oil spill response while protecting the mental health of those protecting our wildlife.

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