Beyond the Feathers: Examining the Mental Health of Oiled Wildlife Responders Deployed to the MV Rena Oil Spill, Aotearoa New Zealand

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Abstract

On the 5th October 2011 in Aotearoa New Zealand, the Marine Vessel Rena struck Astrolabe Reef, 12 nautical miles from Tauranga and later was declared New Zealand's worst maritime environmental disaster. This incident severely impacted wildlife in the region, with 428 live seabirds admitted to the Te Maunga Oiled Wildlife Facility (TMOWF) for treatment and 2063 dead birds collected. The clean-up of oil in the environment and the oiled wildlife response continued for months. An independent review deemed the response to oiled wildlife adequate; however, the emotional toll on wildlife responders was less understood, particularly the impact of stressors on their mental health or attributes of resilience. To understand the mental health impact on oiled wildlife responders attending the Rena oil spill, a qualitative research approach was employed, and in-depth semi-structured interviews were conducted. This approach gained insight into eight wildlife responders' lived experiences of deployment to the TMOWF. Results indicate that participants placed a high value on contributing their skills and knowledge to assist impacted wildlife. While participants accepted and conducted euthanasia, they expressed more intensity of emotion when confronted by mass mortality from animal death in the field or accidental death in the facility. This appeared to be more challenging to accept than euthanasia and gave rise to feelings of being underprepared. Participants reported using informal coping strategies but lacked training in managing trauma, often relying on past experiences to cope. They reported limited opportunities to formally debrief but instead depended on social connectedness and teamwork to support each other. Recommendations from this research suggest urgent attention to be placed on training primary preventions, integrated into oil spill response planning and operational policy to support mental health, stress management, resilience development and coping strategies of oil spill responders working with wildlife.

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Glossary

Glossary A

Tools Recommended for Oil Spill Responders Dealing with Wildlife

Tools	Description
4A's	A set of four self-reflection questions (ask, affirm, assess, act) designed to recognise and manage moral distress. A flexible tool used in human healthcare professions.
Kessler distress scale	A 10-point questionnaire to assess distress or stress someone has experienced over the last 30 days. A measure used in military operations and other contexts.
Low Impact Debriefing	A technique that reduces vicarious trauma. Informal debriefing process; practical but not prohibitive; positive boundary setting.
Moral Distress Thermometer	An illustrative representation of a thermometer to allow an individual to self-identify moral distress at the acute phase.
Personal Reflective Debrief	Intervention to prevent compassion fatigue. Relatively easy to implement with motivated participants.
Professional Quality of Life Measurement Tool (ProQOL)	A measurement tool to assess an individual's experience of professional quality of life. It has compassion fatigue and burnout scales that can be utilised individually. It is completed by the individual and they maintain the choice to share or not.

Glossary B

Concept Definitions of Issues Affecting Oil Spill Responders Dealing with Wildlife

Concepts	Definition
Burnout	Mental, emotional, and physical exhaustion that is not associated with trauma; associated with where you work unlike compassion fatigue which is associated with the type of work.
Caring killing paradox	Animal professionals providing care for animals that they then need to kill as part of their occupation. This undertaking has several implications on a personal and organizational level.
Compassion fatigue	Erosion of compassion over time; associated with experiencing or witnessing trauma of others; associated with the type of work unlike burnout which is to do with where you work.
Compassion satisfaction	The satisfaction derived from being able to do your work well. The balance between compassion fatigue and compassion satisfaction is called professional quality of life.
Human-animal bond	The physiological and psychological attachment to animals that humans experience and impacts their life. Some of which is beyond their control.
Moral distress	Knowing the right course of action but unable to act on it.
Post-traumatic stress disorder	A psychological reaction to experiencing or witnessing a significantly traumatic or shocking event or series of events.
Vicarious trauma	Experiencing trauma through the stories and experiences of others.

Chapter 1 Introduction

1.1 Background of the Study

> "*We can learn from our mistakes when an animal dies. We must learn from our mistakes, and we must never forget; those lessons are powerful."*
>
> **Olly, research participant**

This research draws attention to elements of an environmental incident of the Marine Vessel (MV) Rena's collision with Astrolabe Reef in 2011, causing an oil spill that polluted the environment and contaminated wildlife. The interest lies in how this has impacted the mental health and wellbeing of the oiled wildlife professionals who responded to that disaster. The incident occurred when human error caused the MV Rena to strike Astrolabe Reef, 12 nautical miles off Tauranga, Bay of Plenty, Aotearoa New Zealand (Schiel et al., 2016). Maritime New Zealand (MNZ) activated a full oil spill response (Murdoch, 2013) and the National Oiled Wildlife Response Team (NOWRT) was deployed (Gartrell et al., 2019). This single event was reported in the media as Aotearoa New Zealand's worst maritime disaster (Sharpe et al., 2011). The powerful quote above from the narrative of one participant illustrates the strength of emotion behind the work animal care professionals do and their commitment to do better. Through exploring this incident from the prospective of the trained responders, the research has provided an opportunity to extract valuable lessons from this event and contribute to informed and effective future policy and practices for the NOWRT and other response teams.

The findings of this research are intended to contribute to a deeper understanding of the management and mitigation of mental health and wellbeing challenges that arise from responding to oiled wildlife. This could be achieved by improving the systems and processes supporting mental health and wellbeing promotion, and protection for personnel responding to wildlife emergencies. The evidence from this study may act as contributory information for measures already undertaken in the human health and first responder sector. To support the

development of a sustainable and resilient workforce, targeted training and primary prevention measures should be integrated into the pre, during and post-response phases of an oil spill involving wildlife.

1.2 Rationale for the Research

The impact of oil spills on wildlife and the environment is one of the most visible and extensively analysed effects of oil pollution events (Henkel & Ziccardi, 2018) and a widely reported aspect of the Rena response (Chilvers et al., 2016). As disasters like this unfold in the media, people feel compelled to respond. Trained and experienced responders converge to mount an oiled wildlife response from different agencies, effectively becoming first responders. The actions of responders are often under scrutiny by the media (Chilvers et al., 2016; Henkel & Ziccardi, 2018), potentially contributing to an already stressful work environment. Emergency, disaster or first responders can be considered at high risk for experiencing mental health issues due to work-related exposure to critical incidents (Brooks et al., 2019; Pietrantoni & Prati, 2008). An independent review of the Rena response was undertaken post-response. It showed that the care of the animals was sufficient (Murdoch, 2013), but there was little attention on the mental health and wellbeing of the wildlife responders. What remains unknown is the role of prevention and intervention pre, during and post-spill to support the mental health of the wildlife responders. Although some quantitative research has been conducted in this field, an aspect that remains to be realised is the responders' perspective and what they deem significant based on their first-hand experiences during the Rena response.

Establishing and maintaining a strong professional identity is crucial for supporting the mental health of veterinary teams (Armitage-Chan & May, 2019; Gordon et al., 2023), especially in challenging situations such as oil spill responses, where their unique skills and backgrounds come into play. Oiled wildlife responders in Aotearoa New Zealand, form a subset

of a national team of first responders (MNZ, 2021). They are trained animal care professionals from diverse backgrounds, including wildlife veterinarians, technicians, and nurses, and zookeeping, and husbandry specialists, forming a multidisciplinary veterinary team. While they possess strong skills in wildlife care, they may have limited experience with large-scale responses and no prior exposure to the complex emotional and physical demands of oil spill situations. Consequently, these professionals face unique challenges that can test their professional identity. Veterinary professionals require a solid professional identity to effectively navigate the demands and complexities of their work (Armitage-Chan et al., 2016). While managing issues other animal care professionals may be yet to encounter, they must draw on their expertise while adapting to the complex and emotionally demanding nature of oil spill responses. By fostering and reinforcing their professional identity, veterinary responders can enhance their resilience and overall mental wellbeing in the face of these challenges.

The animal care workforce deployed to oiled wildlife events is a workforce that faces unique challenges in their day-to-day roles. Skills gained may translate to emergency response, reinforcing this study's importance. There may be crucial information the participants share that will contribute to the protection of their mental health. It is not uncommon for veterinary teams to be included in emergency response events (Holmquist et al., 2021; Makita et al., 2015; Vroegindewey & Kertis, 2021). Consequently, as this cohort has limited experience in oil spill response as first responders, they risk experiencing compassion fatigue, burnout, moral distress, or vicarious trauma, which can impact their work, the animals they work with, and their lives during and after a response. Conversely, they may also have positive experiences of compassion satisfaction, job satisfaction or positive experiences of the human-animal bond, no matter the tasks they undertake as an oiled wildlife responder. Many of these aspects are

currently unknown so reinforces the clear need to pursue this research, particularly from the perspective of wildlife responders.

Limited information exists on stressors impacting wildlife responders' mental health and their experiences of compassion fatigue, compassion satisfaction, moral distress, or resilience (Henkel & Ziccardi, 2018; Vroegindewey & Kertis, 2021; Yeung et al., 2021). A key component of supporting mental health is to develop personal resources such as resilience (Ogińska-Bulik & Michalska, 2020) and "emotional preparedness", a term initially presented by Kranke et al. (2021, p. 249). These personal resources are expected to enable the individual to undertake their professional role adequately (Ogińska-Bulik & Michalska, 2020).

1.3 Significance of this Research

The significance of this research lies in hearing the lived experiences of oiled wildlife responders deployed to the Rena incident as part of the NOWRT core team. For some responders, this incident was their first experience in oil spill response. The NOWRT team's skills were primarily in caring for animals, and despite potential prior response training, they had limited oil spill response front-line experience. The central reasons for responding to injured or contaminated wildlife include the intrinsic value of animals (Henkel & Ziccardi, 2018), the emotional attachment or bond people have with animals (Beck, 2014), and the restoration of the environment's fauna. Over the past decades, hundreds of responders across the world have been involved with oiled wildlife response and rehabilitation efforts (Newman et al., 2003; Ziccardi et al., 2011), which underscores the importance of this research. This is critical because first responders in disaster events can be at high risk of experiencing poor mental health outcomes (Benedek et al., 2007; Brooks et al., 2019), a challenge that holds no exclusivity to oiled wildlife responders.

1.4 Research Goals and Objectives

As discussed earlier, in the case of the MV Rena response, the care of the wildlife was considered by the review (Murdoch, 2013); however, the mental health of the core team, trained or experienced wildlife professionals, was not considered as part of the review of this operation. As such, the current research goal was to explore the lived experiences of trained or experienced oiled wildlife responders as first responders in oil spills and the impact on their mental health and wellbeing during the MV Rena response. To understand how oil spill response involving wildlife affects the mental health stress management and coping strategies of trained responders, the intention was to explore this by asking:

- What challenges are faced by trained oiled wildlife responders when managing oiled wildlife?
- What challenges are faced by trained oiled wildlife responders within the oil spill response work environment?
- How do oiled wildlife response agencies promote and protect the mental health of responders?

1.5 Overview of Research Approach

This research employed qualitative modes of inquiry to explore the lived experience of participants and highlighted the effectiveness of in-depth semi-structured interviews to capture valuable insights. Eight participants shared their recollections of attendance at the 2011 MV Rena oil spill event. Careful consideration and reflection informed the choice of a qualitative approach to the formation of the data collection instrument, the interview schedule, aiming to capture constructive, data-rich, descriptive data from the cohort. Various interview techniques, such as probe and redirection questions and pauses, were considered in constructing the interview schedule. This enabled a retrospective exploration of views via a combination of in-person and virtual contexts through the Zoom™ platform to conduct interviews. The

combination was to accommodate overseas participants and local participants whose travel or social distancing had been impacted by COVID-19.

1.6 Positioning of the Researcher and Considerations

The role of an insider researcher and working in the animal care industry provided unique advantages and ethical challenges that contributed to a comprehensive understanding of participants' experiences and the qualitative research process. Having worked in the animal care industry for decades, I have witnessed and experienced the stressors, challenges, and successes the profession has faced. I regarded the positioning in this research as an insider researcher as appropriate and necessary, and a privileged position. I had the opportunity to honour the voice of the participants and represent their lived experiences with an intrinsic understanding of those colleagues and peers that I worked alongside during the Rena deployment.

As an insider researcher, I was able to interpret their experience subjectively but with the benefit of experience and knowledge (O'Leary, 2017). This understanding of the participants and the situation was crucial to this research providing a great understanding of a shared experience with the participants. The speed at which rapport can be built is beneficial when taking the position of an insider researcher and enables the researcher to draw out information using clarification questions or qualifiers to increase understanding or observation of emotion or discomfort (Ross, 2017). Qualitative research is distinctive in the close contact a researcher has with the participants. This close contact can pose a unique ethical consideration (Patton, 2002; Ryan et al., 2007) but also benefit the research and the researcher (Ross, 2017). It is not just what is said that is important in a qualitative interview setting but also what is observed (Braun & Clarke, 2006; O'Leary, 2017). In this research, gaining insight from observation was at times more challenging during the Zoom™ interviews than the face-to-face interviews. This was particularly felt during the COVID-19 pandemic lockdown and the

prolonged period of social distancing and the impact that may have on participants. Fortunately, as an insider researcher, familiarity with the cohort gave some understanding of their body language and verbal cues that an outsider may not be privy to. To compliment this approach, note-taking and reflection were important tasks to be undertaken after each interview.

As primary researcher, maintaining a balance between participant autonomy and obtaining valuable data during interviews posed some challenges. Participants were given the time they needed to share the information and for the researcher to obtain valuable data. One technique was utilised to provide the participants with some autonomy or control over the interview process (Beauchamp & Childress, 2001) so they are not seen as merely a data collection tool. Participants were asked if they would like to pause the interview or recording when things become emotional. Still, that trust also reinforced that it was quite acceptable to pause or stop the interview or simply if they would like to continue with the question. At times when the participants found the information challenging to share, the researcher offered body language cues when someone was crying, for example, by breaking eye contact, looking away and taking the lead if they wished to engage or stop, and using deliberate pauses to extract further information.

In a dual position as the primary and insider researcher, I have some shared commonalities with this cohort. I attended the Rena event in 2011 and worked alongside the participants of this research. This connection created a positive, empathetic research environment for the participants. The direct contact with participants during the interview was advantageous, enhancing participant engagement (Cleary et al., 2014) and eliciting responses in ways that cannot be achieved in quantitative methods (Britten, 2011), such as surveys. This strategy was deemed important for this study as scant information exists for the intended cohort, trained or experienced oiled wildlife responders that are animal care professionals in responding to this oil spill event in Aotearoa New Zealand. Costley (2010) indicated that

insider research has the potential to cause colleagues to feel compelled or obliged to participate as they have had a working relationship. Yet, care around the recruitment phase and careful use of language and body language cues mitigated this obligation.

1.7 Organisation of the Thesis

This thesis is organised into six chapters with integrated tables, figures, and appendices. The chapters are presented in the following order.

1.7.1 Chapter One

Beginning with the background of mental health in first responders and the absence of oil spill response involving wildlife, this chapter sets the tone for the rationale of the thesis. It then states the research goals and objectives, significance for this research and the justification of the qualitative research strategy. The importance of positioning the researcher as an inside researcher is discussed, finishing with how this contributes to future oil spill responses involving wildlife.

1.7.2 Chapter Two

This chapter explores current and past research presented as a literature review about this important topic. It exposes a gap in the literature on how the experience of attending an oiled wildlife response in Aotearoa New Zealand affects the trained and experienced responders.

1.7.3 Chapter Three

Chapter Three presents the research methodology and methods for this research topic. It explains the qualitative research approach using individual in-depth semi-structured interviews of eight invited participants. The chapter then describes the participant recruitment process, data collection, data analysis and the ethical considerations when undertaking qualitative research.

1.7.4 Chapter Four

Presented in Chapter Four are the findings from the data after thematic analysis was undertaken. Furthermore, it provides additional data about the participants' positions and roles within the oiled wildlife response to help the reader understand the context in which they worked. The data is presented into three themes and approached individually.

1.7.5 Chapter Five

This chapter moves to a discussion of the three themes and subthemes. Each is approached individually with analysis presenting ideas as to why this cohort responded in the interview in the way they did. The discussion links to existing literature using examples of other professions that could contribute to this cohort.

1.7.6 Chapter Six

Chapter Six serves as the concluding section of the thesis, and several important aspects are addressed. This chapter highlights key issues and outlines recommendations for this group, suggests future research directions, and acknowledges the limitations of the present study. In doing so, the chapter prepares the reader to understand the critical importance of supporting the mental health of emergency responders, particularly in the context of future oil spill responses involving wildlife.

Chapter 2 Literature Review

2.1 Introduction

This chapter begins by examining how environmental and human-made disasters influence mental health and wellbeing and how traumatic events can impact first responders to better understand the unique challenges these individuals face. It then reviews the literature on the mental health of trained oiled wildlife responders and explores how disasters and emergency response efforts may impact their mental health. Engaging trained professionals is crucial as they are a critical component of oiled wildlife response. In attending an oil spill, they dedicate their time, personal commitment, and professional expertise to support the recovery, rehabilitation, and release of oiled wildlife.

This chapter then examines the importance of preventative strategies and management measures, to enhance resilience among first responders, with a specific focus on oiled wildlife responders, drawing insights derived from research on first responders from various fields. Given the limited body of literature specifically focused on oiled wildlife responders, this will capture perceptions and nuances related to the research topic. Notably, extensive research and publications exist regarding the positive impacts of animal care, particularly involving domestic animals.

Consequently, the subsequent sections of the chapter will review existing research to demonstrate the significant role trained oiled wildlife responders play in emergency response efforts when caring for oiled wildlife and how engaging in such disaster events affects their mental health. Additionally, the challenges and barriers to support building resilience for oiled wildlife teams in disasters will also be discussed. Consideration of the relevant literature will highlight the urgent need to develop positive occupational characteristics among oiled wildlife responders, allowing them to flourish and thrive. Currently, this cohort is largely under-researched, which leads to the focus of the current study.

2.2 Environmental and Human-made Disasters' Impact on First Responders

The mental health and wellbeing of first responders who attend humanitarian crises, whether due to natural disasters or human conflict, are significantly impacted by the environmental and human-caused disasters they encounter. Natural disasters, such as earthquakes, floods, and wildfires, have significant impacts, can result in injuries or death, and require the mobilisation of first responders. These first responders attending disasters or emergency response are known to be at high risk for adverse mental health effects (Lowe et al., 2019). Previous studies have illustrated a significant proportion, between 10% and over 30%, of all first responders may exhibit symptoms of, or be diagnosed with, posttraumatic stress disorder (North et al., 2002; Ursano et al., 1999; Weiss et al., 1995). Moreover, individuals without formal medical or previous disaster response training often constitute a substantial proportion of first-response teams deployed in the early stages of a crisis (Harris et al., 2018). They are recognised to be at even greater risk of experiencing adverse mental health effects (Fullerton et al., 2000).

Disasters have wide-ranging impacts on various aspects of life. The literature also notes that disasters regardless of cause, not only impact domestic animals, wildlife, and the environment, but have far-reaching consequences on the lives of individuals and communities. While not focusing on responders specifically, the World Health Organisation (WHO) takes a holistic approach and has implemented a layered approach to its disaster response framework (WHO, 2022), including integrating mental health considerations. The effects of disaster events are broad, and the economic repercussions have been extensively documented (Egan et al., 2021). The consequences extend beyond economics, with profound ongoing environmental and psychosocial effects for both communities and individuals (Burnett, 2017; Schiel et al., 2016, WHO, 2022). In recognition of the extent of the effects of disaster across many facets of life,

the focus turned to creating systems of planning to address mental health and the psychosocial aspects embedded into disaster preparedness (WHO, 2005, 2022).

Recently, there has been an increasing focus on the health and wellbeing of emergency, disaster and first responders (Arble & Arnetz, 2020; Burnett, 2017; Mitchell, 2020; Thornton et al., 2020). This focus stems from the escalating number of incidents that necessitate the deployment of first responders (Kranke et al., 2017). As more research is focused on this area, a growing body of literature is unfolding to understand responders' emotional health and wellbeing during and after disaster and emergency events (Brooks et al., 2019; Scuri et al., 2019). However, this remains an emerging field. There is an acknowledgement that the occurrence and severity of environmental disasters are on the rise (O'Neil & Kruger, 2022), and the consequences for affected communities and individuals will also increase (Lowe et al., 2019). First responders are set to face similar challenges as others in their communities where they reside, but their experience may be compounded because of deployment to critical events.

The impact of disaster response on mental health has gained increasing recognition in recent research (Eklund et al., 2019;) including the challenges faced by responders and the adverse effects on their wellbeing (Scuri et al., 2019). In previous research, the impact of disaster response has predominantly been examined through the lens of physical health (D'Andrea & Reddy, 2018; Laffon et al., 2016). However, some research has highlighted the importance of mental health as a critical area of concern (Stanley et al., 2016). Responders are selected specifically for their skills for emergency response, yet they still encounter challenges during response work, regardless of the skills or training they have received (Benedek et al., 2007). These challenges include disrupted sleep patterns or less availability to communicate with their support networks, adversely affecting responders' mental health (Benedek et al., 2007).

Currently, the support processes for responders often rely on secondary or tertiary interventions (Arble & Arnetz, 2020), usually occurring after the response event. However, with the increasing frequency and severity of disasters resulting from climate and environmental changes (O'Neil & Kruger, 2022), the demands on emergency management and support to personnel involved are escalating as disasters pose a severe threat to human health and sustainable deployment (Ampuero et al., 2015; Maxwell et al., 2019). This issue is not always factored into risk management strategies for response teams (Yeung et al., 2021; Ziccardi et al., 2011).

Recent research suggests a paradigm shift from a passive approach to dealing with the impact on mental health and wellbeing after response events to a more proactive preparedness mode, incorporating primary prevention practices to address trauma in first responders (Arble & Arnetz, 2020). Implementing such procedures can potentially prepare responders for traumatic events, with potential opportunities to gain resilience. Despite promising initial trials, there remains a scarcity of research on this aspect of preparedness (Arble & Arnetz, 2020). Considering a pre-emptive approach that focuses on skills training to cope with trauma and develop resilience may align with more contemporary research that emphasises primary prevention (Arble & Arnetz, 2020). Shifting the focus towards preparedness would revolutionise the current reactive approach to disaster response by adopting a proactive approach.

Oil spills can be considered hybrid disasters (Medina, 2016; Shaluf, 2007) due to the convergence of multiple contributing factors, resulting in mounting a comprehensive response. The understanding of disaster management has evolved beyond a simplistic view of a linear process addressing a single cause. Contributing factors to a hybrid response include human error alongside system error or failure (Medina, 2016). Hybrid disasters emerge to be harder to predict and respond to compared to natural disasters (Shaluf, 2007), which have elements of

predictability (Morganstein & Ursano, 2020), because the causes and consequences are often contentious (Shaluf, 2007). This is an important perspective since current research suggests that human-caused disaster events tend to be more emotionally debilitating than naturally caused events (Alexander & Klein, 2009; Lanza et al., 2018; Wasson & Wieman, 2018). However, the reasons behind this emotional impact remain relatively unexplored. Using oil spills as an example, which relate to human error and system or process failures, extensive damage becomes apparent, affecting wildlife, people, and their communities (Henkel & Ziccardi, 2018; Saran et al., 2011).

The need for skills training to enhance preparedness and resilience in responding to unpredictable oil spills is a critical concern for responders. Due to the unpredictable nature of oil spills, responders may face circumstances for which they feel inadequately prepared (Ziccardi et al., 2011) despite undergoing rigorous training. One suggested approach to address this issue is providing skills training to build resilience (Nindl et al., 2018). It is yet to be established whether building resilience should be an individual responsibility or provided as part of regular training (Woodman, 2021).

The impact of disasters on first responders and the need for a balanced approach to addressing their challenges are crucial considerations in emergency response strategies. From an emergency response perspective, the availability of resources and the capability to deal with a hazard are crucial factors in implementing risk reduction strategies. First responders play an important function by responding to emergencies and disasters to protect communities. They are often trained with specific technical skills and have knowledge to deal with the stressors derived from emergencies and disasters; however, these technical skills may be inadequate (Fraher, 2011). Regardless of their prior training and experience, first responders are subjected to the same adverse situations with multiple stressors as others in their communities (O'Neil & Kruger, 2022). Currently, the research trend is to focus on first responders' negative

experiences (O'Neil & Kruger, 2022; Thornton et al., 2020), but it has been argued that an overemphasis on the negative results of adversity leads to training and policy that address the problem only from the negative perspective (Alexander & Klein, 2009).

Contrary to the prevailing belief that exposure to traumatic events invariably leads to adverse mental health outcomes, research from various disciplines, including operational military tactical teams, has demonstrated that a significant proportion of team members not only avoid developing negative symptoms but also perform well and exhibit resilience (Kranke et al., 2017; Nindhl et al., 2018; North et al., 2002). Some evidence has also suggested that there are positive outcomes associated with deployment, including utilising debriefing tactics and reliance on social supports (North et al., 2002), with many people able to display incidences of resilience even after traumatic events (Alexander & Klein, 2009; Bonanno et al., 2007). Findings in the military environment are consistent with findings from the general population, where 50% of people exposed to traumatic events displayed resilience (Bonanno & Mancini, 2008).

In light of intensifying and more frequent extreme disaster events, strengthening the long-term resilience of responders to climate and environmental disasters is crucial (Lanza et al., 2018). To do this, it is necessary to determine the extent to which resilience factors, such as social support and emotional resources, contribute to the capacity to deal with adversity. While there exists a substantial body of literature and research on this topic for occupations such as police, firefighters, nurses and ambulance staff, the experience of oiled wildlife responders remains vastly understudied, underscoring the significance of the current study as a pivotal starting point. To enable animal care professionals to manage the complex tasks associated with the provision of appropriate standards of care for oiled wildlife, research has been calling for building and sustaining a healthy workforce. This drive for change could also include a strong focus not only on physical wellbeing but also on emotional wellness among

responders. If this gains traction it has the potential for positive implications such as enhancing resilience and professional quality of life. This in turn could reduce the impacts of burnout and compassion fatigue (Burnett & Wahl, 2015).

In recent decades, wildlife has been impacted not only by climate change, exacerbating natural disasters such as cyclones or floods, but also by human-caused or system failure disasters such as oil spills. Noteworthy examples of such incidents emerge from Aotearoa New Zealand, when the MV Rena struck Astrolabe Reef in 2011 (Schiel et al., 2016), the Deepwater Horizon oil spill which occurred in 2010 in the Gulf of Mexico, and the United States Refugio pipeline oil spill in 2015. The long-term impact of these disasters is an evident concern for the economy, environment, and wildlife but also the health and wellbeing of individuals and their communities (Lowe et al., 2019). Despite the significant impact on health and wellbeing from oil spills, only a few studies have discussed the connection between human health and the psychological wellbeing of responders (D'Andrea & Reddy, 2018; Laffon et al., 2016; Yeung et al., 2021). One recent study acknowledged that intensified shipping and marine transport activities would continue to escalate the risk of an oil spill incident (Chilvers et al., 2021). Because of this reported escalation of events and more public attention because of the immediacy of disseminated data on social media (Starbird et al., 2015), the expectation is that disaster response will be more widely required. This intensification will force response organisations to prioritise specific planning in disaster preparation and management to oversee their responder's mental health and wellbeing (James, 2011). Until now, this has not been the primary focus.

Historically, the narrative around disaster response is from a reactive response approach. The complexities responders face is intensifying and often span numerous concurrent challenges (Harris et al., 2018; O'Neil & Kruger, 2022). Like other professions, first responders are routinely exposed to traumatic critical incidents as part of their job (Kranke

et al., 2017). Coupled with other occupational pressures, such as irregular shift patterns impacting sleep and reduced access to informal support (Stanley et al., 2016), the cumulative effects of such stress place them at increased risk of developing trauma-related psychological disorders (Berger et al., 2012). Recent research has called for a more proactive risk management or preparedness strategy, such as an "all-hazards approach" (Medina, 2016, p. 281) to disaster response. This important approach ensures integration across agencies drawing on skill and expertise and encompasses all aspects of a response beyond the physical hazards requiring attention. This could be a critical strategy as it includes the social consequences of disaster and the human cost. Of note is that the "all-hazards approach" targets all phases of response (Medina, 2016), prevention and preparedness, response, and recovery. Doing so recognises that planning and preparedness, rather than being reactive, could prepare not only the infrastructure for responses but the first responders as well.

2.3 Positive Occupational Characteristics and Barriers to a Positive Response Experience

The literature on the mental health of first responders is beginning to consider the importance of positive occupational characteristics by way of offsetting mental health challenges and trauma. Research around the trauma experienced by responders commonly focuses on negative associations, with little focus on the positive associations which could support mental health and wellbeing and are critiqued as under-researched (Jones, 2017). Some key ideas could be regarded for development into the oil spill response literature to promote positive occupational characteristics. The importance of positive characteristics in the workplace also emerge in new research on animal care workers as an area that requires further attention (Paul et al., 2023) but is critiqued as under researched and in its infancy. Paul et al. reports that positive characteristics could support resilience, the ability to cope or adapt to a traumatic experience. Further, positive associations can come from elements of the role that are enjoyed (Paul et al., 2023) even in a challenging work environment. Participants reported

positive characteristics such as feelings of pride and accomplishment in their work, mainly from being able to contribute their skills and knowledge. This study signalled a clear message that development of positive characteristics, requires input at an individual level but should be supported by organisational strategies.

Considering the differences in the way different responders experience trauma could provide clues to develop strategies, alongside the benefits and drawbacks of exposure to trauma. One study showed a difference between first responders in the fire service who were volunteers and those who were career firefighters and how they experienced on-duty trauma (Dean et al., 2003). This study reported that career firefighters reported significantly more exposure to duty-related trauma than volunteer firefighters (Dean et al., 2003). This holds significance for other first responders, including oiled wildlife responders as teams of oil spill responders comprise of convergent and rostered volunteers who work alongside professional animal care staff (Clumpner, 2008; Ziccardi et al., 2011). It could be that the full-time cohort experiences more trauma related to their duty, coming to deployment preloaded from other experiences. Research reinforces that there is protentional for animal care professionals to experience negative mental health consequences (Paul et al., 2023). This may be important to consider with the incidence of oil spills likely to rise and the services of oiled wildlife responders being required. Processes will need to be in place to protect the ongoing mental health and wellness of the oil spill response workforce, but questions remain as to the best way forward or exactly how those processes will be undertaken. Taking this into consideration, it will also be prudent to consider that mental health is not singular or always has a negative connotation, but to view mental health from the holistic approach to health concepts (Hayes & Poland, 2018).

Addressing the mental health challenges faced by first responders in disaster situations requires integrating prevention strategies and protective factors throughout all stages of the

response. Prohibitors exist as barriers to first responders accessing the mental health support they may need. First responders are reported to defer to risky behaviours such as inappropriate alcohol use or experience sleep disturbance (Jones, 2017), impacting mental health. From this, an emerging challenge is how evaluation is undertaken to identify some mental health issues in these first responders (Jones, 2017). High levels of social support are important for responders and act as protective against some first responders' mental health challenges (Carpenter et al., 2015; Kshtriya et al., 2020). What is seen as necessary is the integration of prevention strategies in all parts of the response before, during, and post-response (Benedek et al., 2007). What remains evident is that the literature lacks evidence of exactly how protective factors could be integrated into disaster response (Ziccardi et al., 2011). Much of the mental health strategies in disaster are emerging from strategies that are targeted at a community level (Ampuero et al., 2015; Calder et al., 2016; Herrman, 2012; Wade et al., 2012) not for responders themselves or in oil spill response in the animal care community.

The presence of stigma and barriers to help-seeking within the responder literature highlights the need for improved support systems and improved social networks for these professionals. Oil spill responders dealing with wildlife often emerge from the veterinary profession. The veterinary profession is reported to experience stigma when faced with help-seeking and a reluctance to seek assistance (Dow et al., 2019). Stigma and reluctance to seek help are not unique to the veterinary profession. Stigma has been reported as an issue in emergency responders (Petrie et al., 2018) and appears to be a universal barrier to seeking help (Haugen et al., 2017; Wright et al., 2022). For example, one in three first responders (33.1%) experience stigma and one in eleven first responders (9.3%) experience barriers to care (Haugen et al., 2017). Other issues that emerged were confidentiality when seeking help, fear of seeking help harming their career or knowing where to get help (Haugen et al., 2017). A fundamental protective measure appears to be access to and use of social supports (Kshtriya,

2020). When available, fewer feelings of stigma were experienced. As social support is frequently mentioned in first responder literature, it also seems an important factor to consider for oil spill responders.

2.4 Strategies to Enhance Resilience in First Responders

The importance of addressing resilience in first responders and overcoming barriers to accessing support is increasingly recognised within response agencies and management. Establishing resilience in first responders is now emerging as a key area of significance and is cited as important for those fulfilling responder roles (Lanza et al., 2018; Wasson & Wieman, 2018). Less understood are the complexities of the environments which might challenge resilience. With the services of responders becoming increasingly necessary (Harris et al., 2018), so too will the integration of strategies as part of responder training. Barriers that prohibit responders from accessing help require close attention from managers and response agencies. The reporting of barriers such as stigma is not uncommon (Wright et al., 2022), along with a reluctance to seek help (Russon et al., 2023) or even being vocal about the issues responders face (Thornton et al., 2020).

Resilience in first responders is recognised as important to develop in individuals and teams. Building resilience to protect and promote mental health among emergency staff will require a growing recognition of the need for preventative measures to address mental health risks among disaster responders (Wright et al., 2022). Resilience is particularly relevant in sectors that experience trauma (Ogińska-Bulik & Michalska, 2020), such as emergency and disaster response. Across the multiple definitions of resilience, there are common threads such as coping, dealing with adversity, adaptability to adverse situations (Bonanno et al., 2007; Mitchell, 2020; Yasien et al., 2006) or "the ability to bounce back" (Skovholt & Trotter-Mathison, 2016, p. 3). The ability to achieve resilience has been described as reliant on an individual's personality (Fayombo, 2010), but other factors include psychosocial factors and

connectedness (Burnett & Wahl, 2015). This change of understanding of resilience emerging from the literature is an important trend change as it renders resilience more attainable than initially thought if it is not purely reliant on a personality feature of an individual. The development of resilience will need to become the collective responsibility of the response agency and the individual (Bennett et al., 2005; Burnett & Wahl, 2015). This will have implications for response agencies when considering training to manage traumatic events that the responder workforce may face. What is emerging from the literature is that positive qualities such as contentment, resilience and compassion satisfaction are proving realistic and achievable (Brannick et al., 2015; Burnett & Wahl, 2015; Sacco et al., 2015) for those engaged in caring professions. Understanding the collective approach is becoming more prevalent to enhance the potential of positive qualities. One study reported an inverse relationship between burnout and resilience (Burnett & Wahl, 2015), indicating that a higher level of resilience means a lower experience of burnout (Burnett & Wahl, 2015). This critical finding will reinforce the need for a collective attitude to resilience, recognition of the underlying organisational factors that contribute to resilience, and then combined with the individual responsibility to support resilience in the workforce.

The importance of promoting resilience among first responders is underscored by their high risk for adverse mental health outcomes (Brooks et al., 2016). Still, contrasting perspectives exist regarding the effects of repeated exposure to traumatic incidents and its potential to enhance their preparedness and resilience. Resilience is a collective responsibility of the response agency and the individual responder (Bennett et al., 2005). It has been suggested that strategies to promote resilience could be targeted at an individual level but also at an organisational level (Bennett et al., 2005). Several lines of evidence have suggested that these first responders, or emergency responders, are at high risk for adverse or poor mental health outcomes (Thornton et al., 2020). These outcomes can include stress and compassion fatigue,

burnout (Burnett & Wahl, 2015) and mental health challenges, including posttraumatic stress disorder and depression (Kshtriya et al., 2020), and it is presumed that this is in part due to repeated exposure to traumatic incidents (Brooks et al., 2019; Pietrantoni & Prati, 2008; Wright et al., 2022). However, other research has put forward a counterargument suggesting that exposure to traumatic events can be beneficial and act to prepare a responder with experience to deal with adverse situations and outcomes (Kranke et al., 2022; North et al., 2002; Weiss et al., 1995), potentially aiding resilience.

Embedding structured pathways to enable responders to connect and the teaching of debriefing skills enables a strategic path for other first responders, including those responding to oil spills. This builds on the current thinking that even in the face of traumatic events, human beings inherently can display elements of resilience (Bonanno et al., 2007). Gaining on-the-job experience may be a protective measure where the exposure to incidents is normalised (Weis et al., 1995) rather than seeing trauma as the final outcome. Understanding the beneficial aspects of exposure to trauma from the perspective of education and training and developing resilience may be a way to counter the negative effects. Understanding methods to build resilience or negate adverse effects in first responders are an important consideration for response agencies (Burnett & Wahl, 2015). Response agencies and other organisations are beginning to understand that they have a significant responsibility to protect workers' mental health (Alexander & Klein, 2009). More recent research is advocating the move away from the traditional focus on vulnerability moving towards building resilience, reflecting the positive outcomes that are possible (Bonanno et al., 2007).

The exploration of programmes and interventions to enhance resilience after emergency events have led to a dialogue on the effectiveness of debriefing, social support, psychological first aid, and resilience training, as well as the shift towards primary prevention and the benefits of using preventative care approaches. An extensive amount of research has reported different

programmes and interventions to enhance resilience, particularly after an emergency event has occurred (Ampuero et al., 2015; Calder et al., 2016; Herrman, 2012; Wade et al., 2012). Of those, debriefing and the importance of social support (Lanza et al., 2018) have been widely used as key approaches to support first responders. There is some suggestion that evidence-informed approaches, such as psychological first aid (PSA), could be used for the responders themselves, but currently is primarily a tool to reduce immediate distress (Birkhead & Vermeulen, 2018; McCabe et al., 2014; Shervington & Richardson, 2020) and applied by personnel to those affected by disaster or emergency. However, some research has criticised that while they offer opportunities to counter the adverse effects, there has not been an adequate focus on when this should occur, or the type of training required. Some literature suggests that resilience training can be incorporated as a taught technical skill with built-in revalidation training to mitigate skill decay (Woodman et al., 2021).

Increasingly, other research has advocated the move from post-response interventions centring around post incident debriefing and targeted mental health interventions to include a primary prevention focus. As part of the primary prevention tactic, agencies such as the World Health Organisation (WHO) are advocating mental health to be included in preparedness strategies as part of preparedness planning (WHO, 2022). Using primary prevention approaches including acknowledging mental health, improving access, and reducing barriers, helps to strengthen people's protective factors as they enhance and protect positive mental health, aiding recovery. Programmes that promote protective factors seem to improve people's capacity to cope (Barry, 2007), buffer "negative life events" (Kalra, 2012, p. 83) and is reported to be beneficial in reducing stigma associated with help-seeking in emergency response teams (Wright et al., 2022).

2.5 The Role of Wildlife Responders

The integration of personnel to respond to oiled wildlife can be traced back to the 1960s. During this time, individuals and some professional organisations were involved in most aspects of a spill, including collecting and treating affected wildlife (Newman et al., 2003). Early response organisations pioneered the processes to treat affected animals and collaborated and utilised trained staff and volunteers to rehabilitate oiled animals (Spears, 1991). There was no empirical evidence to support the success of the rehabilitation processes at that time (Massey, 2006). With public pressure mounting to care for affected animals, there was a demand for coordinated responses to oiled wildlife due to many animals dying through the contamination and oiling of their environment (Ziccardi et al., 2011). This was seen through reports from the 1989 Exon Valdez oil spill, indicating that a conservative estimate of 100,000-300,000 animals were killed (Shigenaka, 2014). The establishment of agencies such as the International Bird Rescue (IBR) evolved from early spills in the 1960s and 1970s. Increased demand to respond to catastrophic incidents such as the Exon Valdez incident resulted in the Oiled Wildlife Care Network (OWCN) based in California being established to address this problem (Newman et al., 2003).

The debate surrounding oiled wildlife rehabilitation encompasses concerns over efficacy, cost, conservation value, and ethical considerations while highlighting the invaluable contributions of multidisciplinary wildlife responders and dedicated volunteers. Further, the pressure was coming from other sectors debating the efficacy of treating oiled animals and where a substantial number of resources should be required to mount an effective response (Henkel & Ziccardi, 2018). Oiled wildlife rehabilitation is criticised as labour-intensive and extremely costly, with some questioning the conservation value (de la Cruz et al., 2013). The contra argument is the ethical and animal welfare reasons to respond (Henkel & Ziccardi, 2018); consequently, the oiled wildlife response remains contentious and debated widely

(Henkel & Ziccardi, 2018; Massey et al., 2005). Regardless, as the debate continues, responders and volunteers continue to contribute across all areas dedicated to the rescue and rehabilitation of oiled wildlife. Wildlife responders are a multidisciplinary group and have been considered a valued part of the overall response effort (Ziccardi et al., 2011). Volunteers traditionally comprise a large and vital component of the rescue and recovery team as part of the emergency responses, giving their time, experience, and expertise (Battershill et al., 2016; Newman et al., 2003).

Seminal research conducted by Ziccardi et al. (2011) indicated the unique role wildlife responders play during a spill event. Responders consist of trained and convergent volunteers plus trained full-time staff who work with other agencies to rescue and restore contaminated wildlife (Henkel & Ziccardi, 2018; Ziccardi et al., 2011). The responder workforce fulfils many roles in response to care for the animals and is a vital part of any response effort. These roles require elements of veterinary knowledge, wildlife nursing, problem-solving, and responding to a complex work environment with external pressures, often out of the responder's control. Their activities are represented in all aspects of the response, from collecting affected animals from contaminated beaches, stabilisation, and veterinary treatment to the husbandry and care until release.

The field of oiled wildlife response encompasses research on animal treatment protocols, environmental recovery, and the emerging focus on health and safety risks for both responders and affected communities. Oiled wildlife response is a relatively new and emerging science (Massey, 2006). In the past three decades, research on oiled wildlife response has mainly focused on improving animal treatment protocols (Massey, 2006; Mazet et al., 2002; Newman et al., 2003; Tseng, 1999). Key scholars have focused on oil spill research on the impacts on wildlife populations, enhancing treatment protocols and environmental recovery (Duerr et al., 2016; Massey, 2006; Mazet et al., 2002; Tseng, 1999). However, in recent years,

there has been increasing interest and attention on the health and safety of those affected by large spills (Laffon et al., 2016) due to a large volume of research from the Deepwater Horizon incident. Much of the research focuses on the health impacts on communities, with some on responders (Laffon et al., 2016). As this area expands, more attention is being placed on health and safety protocols because of the health risks responders potentially face from petroleum products. Some attention is given to the health and safety risk to wildlife responders working with animals contaminated with petroleum products (Massey, 2006). Of the risks and health impacts mentioned in the Deep-water Horizon literature, mental health and safety risks are less mentioned but are emerging as a theme for affected communities (Laffon et al., 2016).

2.6 The Impact of Oil Spills on Wildlife Responders

Research has indicated that those involved in oiled wildlife response comprise a multidisciplinary team of animal care professionals (Henkel & Ziccardi, 2018). The credentials of these participants have been reflected in existing research that suggests that while many of them are trained professionally in veterinary, husbandry, and nursing care of animals, their skills to manage mental health or develop resilience have not necessarily been instilled or embedded in their previous training or continual professional development (Gordon et al., 2023). They are motivated to participate in this kind of event because of ethical, moral, professional and conservation reasons, as well the physiological and emotional response to the human-animal bond (Englefield et al., 2018; Hanrahan et al., 2018; Henkel & Ziccardi, 2018; Mazet et al., 2015; Reeve et al., 2005; Saran et al., 2011). The intensive nature of the work oiled wildlife responders undertakes under extreme or adverse circumstances (Henkel & Ziccardi et al., 2018; Ziccardi et al., 2011), including the care of potentially thousands of animals, reinforces the call for increased attention to address managing mental health. This has confirmed the need to explore prevention strategies to support oiled wildlife responders (White et al., 2021). With the increasing incidence of global environmental disasters (Lowe et al.,

2019; O'Neil & Kruger, 2022) and thousands of oil spill responders having already been involved (Newman et al., 2003), the issue will only escalate. The escalation of the use of oiled wildlife responders will mean the responsibility for this will lie with response agencies and managers to provide solutions to the mental health risk.

The need for further research on the effects of oil spill response on responder mental health, particularly in the context of oiled wildlife responders, has been recognised in existing literature but has not been thoroughly explored to date. Existing literature on first responders undertaking roles other than animal care repeatedly emphasise the importance of social support (Bennett et al., 2005). This emerges as an important protective factor for first responders (Kshtriya, 2020) and was mentioned in one of the classic oiled wildlife responders research projects; however, there has not been a more updated study to examine this further. Experts in oiled wildlife responders' research (e.g., Ziccardi et al., 2011) have called for the need to include the effects of oil spill response on responders' mental health, but this has not been fully explored. Integration of this into oil response literature for wildlife is in its infancy.

The successful context of emotional preparedness and connectedness has been linked with the human healthcare workforce (Bender et al., 2021). Recent research focused on the wellbeing of other first responders has emphasised how emotional preparedness (Kranke et al., 2022) is necessary for good health outcomes and the benefits of emotional connectedness in teams that respond to disasters (Bender et al., 2021). Despite their crucial importance for good health outcomes and the wellbeing of both volunteers and other responders, to date, these apparent crucial aspects for responders (emotional preparedness and emotional connectedness) have not been fully considered for oil spill responders working with wildlife (Ziccardi et al., 2011). Although some work has been undertaken by Yeung et al. (2021) to investigate the experience of the responders in association with burnout, compassion fatigue and resilience, the effect of social and emotional connectedness is yet unknown. These studies from Ziccardi

et al. and Yeung et al. begin to suggest the importance of an integrated preventative approach to managing emotional impacts. Further development of this could be developing preventions at a primary level rather than secondary interventions after the event. Existing literature on first responders, such as police and firefighters, has highlighted social support as critical and an integrated part of the response culture, but there remains a paucity of evidence in oiled wildlife responders' research. Despite this, recent research that focused on the wellbeing of animal care professionals (Hatch et al., 2011; Moore et al., 2014; von Dietze & Gardener, 2014; Volk et al., 2018; Yeung et al., 2017), such as oil spill responders have emphasised that this is urgent. Some of this research has also called for the use of a qualitative approach to explore the lived experience of oiled wildlife responders in future research.

A growing body of literature has examined evidence of compassion fatigue and moral distress in the human health caring professions (Andrukonis & Protopopova, 2020; Figley, 1995; Hansen et al., 2018; Singh et al., 2020). Influential research was undertaken by Figley (2006) to also recognise this in those that work with animals. More recent studies consistently report that animal care professionals share several commonalities with their human healthcare counterparts (Dow et al., 2019; Hill et al., 2020; Moses et al., 2018; Newsome et al., 2019) but are exposed to different challenges of this physically and psychologically demanding role of animal care. Evidence suggests this may include navigating the psychological and physiological impacts of the human-animal bond (Beck, 2014; Hall et al., 2004; Hanrahan et al., 2018), complications of the caring killing paradox described by Tallberg and Jordon (2022) as well as the welfare of the animals in disasters (Sawyer & Huertas, 2018). The generalisability of these impacts is useful, yet the literature is still to encompass what it might mean for animal care professionals in disaster situations. While these factors are likely to combine to put responders at an occupational risk, the issues become more complex as there is potential to impact many aspects of a responder’s life. At this stage, there is no provision for this cohort of

wildlife responders on how to mitigate compassion fatigue, burnout, or moral distress or if training and experience effectively manage these issues.

2.7 Oil Spill Response in Aotearoa New Zealand

Aotearoa New Zealand has faced a series of oil spill incidents over the past three decades, some leaving a lasting impact on the environment and two triggering wildlife responses. The six noteworthy oil spill incidents are presented here sequentially. The Don Wong spilt 400 tonnes of automotive oil into the ocean when it ran aground in 1998 just off Stewart Island. The container ship Rotoma created a six-kilometre oil slick in 1999 when seven tonnes of bilge were discharged off the Tutukaka coast. In 2000 the Seafresh sunk off the Chatham Islands, spilling 60 tonnes of diesel. In 2002, the Jody F Millennium was grounded near Gisborne, and 25 tonnes of fuel oil was spilt. There was a near miss when the Tai Ping ran aground near the entrance to Bluff Harbour and was re-floated without any fuel oil spilled (Maritime New Zealand [MNZ], n.d.). Of these events, only one, the Jody F, had required activation of a small wildlife response (B. Gartrell, personal communication, October 8, 2021). The most severe and significant event occurred in 2011 when the Marine Vessel (MV) Rena ran aground on the Astrolabe Reef off the Tauranga coast. Approximately 350 tonnes of heavy fuel oil were spilled (Battersill et al., 2016; Schiel et al., 2016). This event was declared by the then Minister of the Environment, the Honourable Nick Smith, as New Zealand's worst environmental disaster (Sharpe et al., 2011). From this incident, an oiled wildlife response was activated (Hunt et al., 2014; Gartrell et al., 2014; Mar, 2021). In this incident, volunteers and responders collected 2063 dead wildlife (Hunter et al., 2019). While almost five hundred animals were treated successfully to the point of release back into the environment, this level of animal mortality and, as with other major oil spills, triggered a multi-layered coordinated wildlife response (MNZ, 2021), gaining international attention media attention (Sheil et al., 2016).

The research conducted after the MV Rena response encompassed a wide variety of research interests including animal care, the environmental impact, community response, and the role of volunteers, shedding light on the complexities and challenges faced during oil spill incidents. Much of the existing research on Rena has focused mainly on several key areas including; the veterinary care of the animals during the Rena response activities (Gartrell et al., 2014, 2019), the post-response effects of oil on animals and their survivability (Sievwright, 2019), the initial and ongoing impact on the environment (Battersill et al., 2016; Schiel et al., 2016) and some commentary on the economics of oil spills (Egan et al., 2021, 2022). Some work has been done on the wildlife response to oil spills, as seen by the media (Chilvers et al., 2016) and animal mortality (Hunter et al., 2019). In addition to the focus on the animals, economics and environmental impacts, some research highlighted the effect of oil spills on communities and what a community response looks like, particularly with the contribution of volunteers (Smith et al., 2016). This research investigated volunteers, a specific cohort that self-deployed to the Rena response. In particular, the work of Smith et al. (2016) and Hunt et al. (2016) noted the importance of a community response to the event and community recovery in the face of something that was caused by human error (Smith et al., 2016). This is an important component of the literature as human-caused disasters are known to have a more significant impact on people than naturally occurring events (Alexander & Klein, 2009; Lanza et al., 2018; Wasson & Wieman, 2018). Noteworthy is the indication that the responders, represented by a volunteer cohort, expressed stress and grief. (Hunt et al., 2014; Sargisson et al., 2012). One author has reported the potential mental health cost to the responders (Short, 2017), including the experience of potential stress and trauma. Within this work, however, there was no provision for the supportive measures that may have been undertaken to alleviate this. Research that focused on qualitative data reported that the experiences were mostly positive in part because of volunteers' ability to contribute and participate (Sargisson et al.,

2012). Contribution and pride in the work are also seen in other sectors, such as animal carers, as positively reinforcing (Tallberg & Jordan, 2022). While the contribution of volunteers is vital in emergency response (Harris et al., 2018) and in oil spill response involving wildlife (Ziccardi et al., 2011), the lack of training or experience for volunteers who often self-deploy (Clumpner, 2008) or converge at the time poses a significant problem for response agencies. This phenomenon is also identified in other research, where the volunteer contingent has limited training in response activities or skills to manage some of the challenges of such a complex environment (Harris et al., 2018; Kranke et al., 2017), including oil spill responders (Clumpner, 2008; Ziccaridi et al., 2011).

Research on the mental health effects of oiled wildlife responders has revealed the need for both quantitative and qualitative analysis, as well as a focus on social support and proactive training to mitigate stress and burnout. The most recent research investigating the mental health effects on oiled wildlife responders has used quantitative analysis to examine some of the issues (Yeung et al., 2021). Results from this study indicated strongly that stress and burnout were aspects of a wildlife response. Although there was limited discussion on what is useful to mitigate some of the reported effects of burnout and stress, the authors signalled the importance of exploring responders' lived experiences to protect their mental health (Brooks et al., 2019; Yeung et al., 2021). These authors also recommended foundational work to be undertaken in the future to ensure the emotional health and safety of responders. This may prove to be an important consideration for this cohort, as currently, the focus for the training of responders' centres around technical training or "skills training" (Thornton et al., 2020, p. 155) instead of integration of training for mental health strategies for responders. This also highlights that there is little understanding of the importance of when training should occur or when protective factors can be established, including the availability of social support for responders (Kshtriya, 2020). A recent study on animal care professionals suggested that to improve psychological

wellbeing, embedding peer support and proactive training in communication would assist in managing compassion fatigue and burnout in this cohort (White et al., 2021). Social support has gained traction in other literature, particularly in suggesting that social support training and opportunities are critical to imbed before a disaster response (Kshtriya et al., 2020).

2.8 Summary

This chapter provided an overview of current and past literature exploring the impact of disasters on first responders. This was to establish some understanding of the mental health of trained responders attending human-caused events such as oil spills when acting as wildlife responders. Overall, studies focusing on first responders have highlighted the need for further attention on developing resilience as an attribute for the professionals' attending emergency and disaster events. Important themes emerged from the studies, including the benefits of resilience as protective against mental health consequences such as burnout and the benefits of targeting prevention strategies at a primary rather than secondary intervention level. Emotional preparedness (before response) and connectedness (during and post response) were also important themes that enhanced resilience and acted as protective factors for responders. With increasing demands on first responders, finding out what is essential to them from their lived experience is critical. Yet to be deciphered is if the responders experience compassion fatigue or moral distress or if they have strategies to mitigate these issues. These will require further investigation, potentially utilising data from the responders themselves. The evidence reviewed here has signalled a pertinent role for response agencies to lead and deliver training strategies alongside the traditional individual strategy. Doing so will increase understanding of how this could be integrated into response preparedness for wildlife responders. The next chapter will provide the background and context of the methods and methodology chosen to undertake this research.

Chapter 3 Methodology and Methods

3.1 Introduction

This chapter outlines the methodology and methods chosen to investigate and explore the lived experiences of wildlife personnel that attended the Marine Vessel (MV) Rena response. In doing so, this chapter discusses the use of qualitative methodology and describes the research methods, including participant recruitment, data collection, data analysis and ethical considerations. As this research is positioned from an insider lens, additional consideration on managing insider research, benefits and potential challenges is also discussed.

3.2 Methodology

3.2.1 Overview of Study Design

Several factors influenced the choice of a qualitative approach for the current research. The qualitative approach is relevant as there is an apparent epistemological gap in the literature around the commentary and lived experiences of animal care professionals attending oiled wildlife responses. Therefore, qualitative techniques will deepen the understanding of this cohort's lived experiences. As qualitative techniques have the potential to generate data with thick descriptions (Braun & Clarke, 2006; Whitting, 2008), it was selected as the most appropriate approach for this research. O'Leary (2017) suggested that qualitative research using an inductive approach discovers information and therefore has driven this research, allowing exposure of themes from the participants' words. The information generated from participants through qualitative research is critical as it values the multiple perspectives of the participants, embraces rather than rejects subjectivity, and allows the data to be the storyteller. Using an interpretive lens to address the research purpose enables the researcher to understand the cohort better and provide information that will inform future response planning and preparedness, policy, and practice to support future wildlife responders.

The effectiveness of qualitative research in exploring experiences and understanding the human experience is demonstrated through its adaptability and emphasis on participants' responses. This qualitative research involved descriptive, explorative techniques and an inductive approach (Cleary et al., 2014; Ryan, 2007). Using an inductive approach in qualitative research acknowledges the potential for developing and exposing themes, potentially linking to theory, based on participants' responses (Ryan, 2007). For this research, it demonstrated the importance of moving past the pure description of the phenomena (Britten, 2011). The adaptability of this research tool emphasised the importance of qualitative research for this project because it explored the experiences of those interviewed (Ryan, 2007) through their own words. This adaptability could be criticised for lack of rigour (O'Leary, 2017) or heavily laden with ambiguity or subjectivity (Ryan, 2007); however, it is understanding the human experience under investigation. Research would show that it is best demonstrated through words and meaning rather than numerical data reinforcing that a qualitative approach is a solid tactic.

3.3 Methods

3.3.1 Participants

The recruitment process for this research focused on selecting participants with extensive wildlife veterinary, husbandry and rehabilitation experience. Purposive sampling was used to recruit participants (Palinkas et al., 2015). The recruitment process commenced after receiving ethics approval from the Massey University Human Ethics Committee (Appendix 1). To be eligible to participate in this research, participants were required to meet the following criteria:

- Trained animal care professionals with qualifications such as a veterinarian, veterinary nurse or technician or experienced in wildlife rehabilitation; and/or

- Have five or more years of experience in wildlife rehabilitation and husbandry; and/or
- Contracted to or affiliated with an oil spill response agency or part of the National Oiled Wildlife Response Team.

Ziccardi et al. (2011) stated that responders working with oiled wildlife emerge from diverse animal-related fields; therefore, the above-chosen criteria reflected particular importance for this research to focus on the participants' extensive experience in wildlife veterinary, husbandry, and rehabilitation. Using purposive sampling ensured they had had exposure to the more challenging issues of working with animals in the Rena oil spill to address the research purpose (Ryan, 2007). Their experiences provided a framework or emotional reference for participants to reflect upon.

The recruitment process for participants in the research study involved reaching out to qualified personnel through professional networks, utilising email correspondence, and ensuring written consent before conducting interviews. Participants were recruited through the researcher's contacts from the Oiled Wildlife Response (OWR) network and other professional networks with qualified personnel who attended the response. The Director of Oil Spill Response, Wildbase at Massey University, emailed potential participants the Information Sheet (Appendix 2) and Invitation Letter (Appendix 3). Potential participants were asked to contact the researcher directly via email or phone if they were interested in participation. The recruitment period was from 28 July 2021 to the 7 August 2021 inclusive, and eight participants were recruited and agreed to participate in the research. Before the commencement of the interviews, participants were asked to sign the consent form (Appendix 4) or reply to the email attaching a signed consent form to confirm written consent. Prior to the arranged interview, one participant requested and was sent the semi-structured interview schedule for their viewing (Appendix 5).

3.3.2 Data Collection

The research used semi-structured interviews to collect data to gain insights into the experiences of eight wildlife responders and their perspectives on the subject. This enabled the researcher to secure the participants narrative as data (Braun & Clarke, 2006). This approach uses a two-way conversation led by the researcher with the participants. The semi-structured interview allowed the interviewer to dive deeper into the responses from the participants as the interviews progressed with some flexibility and adaptability (Braun & Clarke, 2006; O'Leary, 2017).

The data collection process for this study involved reviewing interview questions, arranging interviews, and recording methods, with participants given options for face-to-face or online interviews. The semi-structured interview questions and prompts were piloted and practised allowing modification time before the commencement of the study (O'Leary, 2017; Whiting, 2008). Data collection spanned from 6 August 2021 until 16 December 2021 inclusive. Interviews were arranged at a mutually agreed time and place suitable for the participant and the researcher (Whiting, 2008). Participants were given choices to be interviewed either face-to-face or via Zoom™. Face-to-face interviews were recorded using a digital recorder, while online interviews were recorded through Zoom™.

The implementation of a Level 4 lockdown by the Aotearoa New Zealand government during the data collection period had significant implications, resulting in changes to interview methods and an extended completion period. After the first three interviews were complete (two face-to-face and one via Zoom™), the Level 4 lockdown due to a surge of COVID-19 was implemented. Careful consideration was factored into participants needing time to navigate a complex emerging public health issue that could take emotional resources or influence how they described the Rena incident reflecting how they felt at this time. After consulting with the supervisors, it was felt that potential participants may be unduly stressed

or unwilling to participate due to the need to manage and focus on their health and wellbeing and that of their families. The remaining five interviews were undertaken over the next three months. Two participants resided overseas during the interview period, and one was involved in an oil spill response. This also prolonged the interview completion period. At the conclusion of the data collection period, four interviews were conducted via Zoom™ (two overseas participants and two out of region), and four were conducted face-to-face.

The primary researcher employed various techniques, including body language observation and deliberate silences, to enhance the interview process and acquire participant information. During the interviews, the researcher was mindful of using pauses to allow participants to think, used redirection phrases, disconnection of eye contact and observation of body language. Combining these techniques acted as signalment of when participants had nothing more to say or wished to continue. Body language and non-verbal cues are considered part of the interview process (O'Leary, 2017). The use of Zoom™ video calling enabled the researcher to respond to facial cues (Archibald et al., 2019). Understanding body language allowed the researcher to provide prompt questions and redirect the participant where needed (O'Leary, 2017). The use of deliberate silences is an advocated technique suggested by Lune and Berg (2017). This was used to create space, prompting the interviewee to fill the space with a reply but with time to reflect before they respond. The strategy of deliberate silence capitalises on a natural reaction to fill the gap (Lune & Berg, 2017) and for the interviewee to say something. This provides an alternate way to acquire information without a verbal prompt. The interviews were between 50 and 75 minutes.

At the conclusion of the interview period, each interview was transcribed verbatim by the researcher. A copy of the interview transcript was emailed to each participant for review, providing them with an opportunity to indicate any changes. At this stage, they were also asked to complete the Transcription Release Authority Form (Appendix 6) and return both within

two weeks of receiving the transcript. No amendments were requested, and all participants agreed for the transcripts to be released for analyses and write-up.

3.3.3 Data Analysis

The systematic analysis of the transcripts revealed key patterns and insights within the data. The analysis was undertaken based on Braun and Clarke's Recommended Phases of Thematic Analysis (2006): (i) active reading to familiarise the primary researcher with the data; (ii) initial code production; (iii) refocus of broad themes then collation of codes into theories or groupings; and (iv) refine and review themes then define and refine themes (p. 86).

The inductive and interpretative approach used in this study revealed common themes and sub-themes. This is illustrated by the example of one theme and sub-theme development about participants' experience of the death of animals at the Rena response within the Te Maunga Wildlife Facility. This provided valuable insights into the emotional impact on animal care professionals. As the inductive and interpretative approach was undertaken, common themes were exposed and then were grouped (Braun & Clarke, 2006). Each participant was given an opportunity to express how they felt about the experience of the death of animals. After further categorising and examining animal care professionals' experiences of death from the current literature, some of the data was coded under three separate sub-themes: (i) animal care professionals generally accept euthanasia as something that will occur, and they have some control over; (ii) accidental death of animals in the facility was difficult, and (iii) human-caused events and mass mortality events are difficult. These subthemes underpinned the overarching theme of the experience of the death of animals at Rena.

Additionally, reflection notes were reviewed with consideration given to meaningful non-verbal cues (O'Leary, 2017), such as a body position shift, lowering of the eyes, or weeping. These actions were then analysed and cross-referenced, attaching observed responses to the question asked and assessing whether they enhanced the meaning.

3.3.4 Trustworthiness

The systematic management and analysis of the collected raw data, including recorded interviews, interview notes, and post-interview reflection field notes, established the trustworthiness and credibility of this research (O'Leary, 2017). Raw data was a combination of recorded interviews, notes taken during the interview and the researcher's post-interview reflection field notes.

3.3.5 Documental Rigour

This research demonstrated the rigorous methodology employed, ensuring documental rigour, procedural rigour, credibility, auditability, and the potential transferability of findings. Demonstrable documental rigour was evidenced through the various documents distributed to the participants, including the Ethics approval letter, Information sheet, Invitation letter, Consent and Transcript Release forms, and the Printable Resources (Appendix 1-7).

Procedural rigour was established through the processes of the research proposal being presented to and approved by the Massey University Human Ethics Committee (Appendix 1) and the data collection technique, including reflection and critical assessment at each stage. Credibility was demonstrated by the primary researcher being an insider researcher, known to and trusted by the participants, through transparency of the process and information provided to participants. This was reinforced by participants having the opportunity to review and accept the transcripts and they were informed they would receive a summary of the completed thesis. Auditability, or creating research processes that another researcher can follow through traceable steps, was demonstrated by the interview schedule and the process of thematic analysis that was followed. This produced traceable steps while still acknowledging subjectivity in qualitative work. Of key importance to this study is that the findings have the potential to reflect transferability with the hope that the findings can be applied outside the

context of the Rena response but produce results that could help the oil spill response community in general.

3.4 Ethical Considerations

Ethical rigour was demonstrated through processes to respect the rights of the participants by adhering to moral codes, including informed consent, protecting anonymity and confidentiality of the participants. Before the commencement of the research, ethics approval was received on 28th July 2021 (Appendix 1).

3.4.1 Voluntary Participation and Informed Consent

The interview process ensured participant consent and rights by implementing voluntary participation, informed consent through signed consent forms, the right to withdraw or decline questions, and the opportunity to review and sign interview transcripts. Potential participants were reminded that their participation was voluntary and that consent forms were signed (Appendix 4) prior to undertaking the interview. The consent form ensured that participants were conveying informed consent to participate while still retaining the right to withdraw or decline any question during the interview (O'Leary, 2017; Ryan, 2007), respecting the principles of participant rights. Participants were offered the opportunity to review and sign the interview transcripts by signing a Transcript Release Form (Appendix 6).

3.4.2 Confidentiality

Confidentiality is crucial in qualitative research, particularly due to the inherent value placed on the researcher-participant interaction (Beauchamp & Childress, 2001). Specific measures were implemented in this research to protect participant anonymity, including using pseudonyms as unique identifiers. Additional identifying characteristics, such as participants' position or professional title, were recorded; gender or age information was not recorded, but this information was known to the primary researcher.

3.4.3 Data Storage

To ensure the security and accessibility of research materials, strict measures were implemented, including digital storage with password protection, transfer of audio recordings to a secure computer, and physical storage in a locked cabinet within the researcher's office. All interview transcripts were stored digitally on a password-protected computer that could only be accessed by the primary researcher. The audio recordings were removed from the recording device once they had been transferred onto the password-protected computer. Field notes and a printed copy of the interviews were stored in the researcher's office in a locked cabinet.

3.4.4 Response Bias

The primary researcher utilised three techniques to mitigate the response effect and response bias in insider research. Maintaining the position of insider researcher may increase the chance of the "response effect" (Costley, 2010, p. 92) or response bias (Ross, 2017), both known to occur in insider research. To mitigate the response effect or bias, the three techniques utilised were: 1) the use of the pre-prepared interview schedule, which mitigated the temptation of using leading questions to solicit an answer; 2) the use of redirection phrases with participants who might say things such as, "Well, you know, you were there" and 3) pre-prepared prompt questions. This technique of clarification, probe and redirection questions used in semi-structured versus structured interviews mitigated potential "response bias" (Costley, 2010, p. 93).

3.4.5 Power Dynamics

Costley (2010) indicated that an insider researcher has the potential to make colleagues feel compelled or obliged to participate as they have had or did have a working relationship. Therefore, careful consideration was undertaken to ensure there were options for the participants to participate or to decline the process or individual questions. However, given the

extended time frame between the Rena event and the present day, the peacetime period would have reduced the conflict of interest. The primary researcher holds no authority or supervisory position in her current role or oil spill response activity, so there was limited to no power dynamic that may occur in future oil spill responses. It was also noted on the consent form that participation in the research would not inhibit the relationship with the team or affect the ability to respond again.

3.4.6 Discomfort

The emotional impact of the research participants' experiences and the support provided to them were key considerations throughout the study. Regardless of the 10-year span from the incident to undertaking the research, the experiences the participants shared were, at times, emotionally charged with the potential to trigger some discomfort. Resources were provided to each participant at the cessation of the interview. This included a printable handout (Appendix 7), a resource for participants containing contact details for an Employee Assistance Program (EAP) if they wished to connect with a professional with some recommendations to manage emotional distress. After the interview, participants were acknowledged and thanked for sharing what may have been difficult things to discuss.

The potential discomfort experienced by the researcher while listening to participants' stories prompted the identification of pre-planned resources and post-interview reflection to provide support and facilitate a deeper understanding of the shared experiences. It was anticipated that hearing the participants' stories could create discomfort for the researcher. Therefore, pre-planned resources were identified to support the primary researcher. This included access to professional assistance through the EAP or reflection opportunities with the research supervision team. Post-interview reflection notes were made after each interview to contemplate what was said, as some participants' experiences were comparable to the researcher's experience. The opportunity to reflect after each interview was also critical to

consider the importance of this research with respect to Māori uara (values) and mātauranga (knowledge). This was particularly crucial in giving consideration to the environmental stewardship of the wildlife in Tauranga who are viewed by Māori as taonga (treasure). The intention was to acknowledge and respect the principles of Te Tiriti o Waitangi (the Treaty of Waitangi).

3.5 Summary

This chapter presents the methodology and methods undertaken as part of the qualitative approach for this research project. The chapter described the participant recruitment process, data collection, data analysis and ethical considerations. The chapter also describes additional ethical concerns to managing insider research. The following chapter will present the findings after thematic analysis has been applied to the data showing some examples of this approach and linking to current and past research.

Chapter 4 Results

4.1 Introduction

This chapter opens by providing a profile of the participants and a description of roles and positions undertaken within the Te Maunga Oiled Wildlife Facility (TMOWF), a purpose-built, temporary wildlife rehabilitation centre. It then presents the results, and three main themes are discussed. Firstly, attending the response evoked mixed reactions from participants, including uncertainty, trepidation, and excitement. Participants' responses to the event were complex and varied, encompassing feelings of uncertainty about the situation, a sense of trepidation regarding the challenges they would face, as well as a degree of excitement about being part of the response effort. Secondly, dealing with animals that died during the response affects people differently depending on the context. The emotional impact of handling deceased animals during the response varied among participants, influenced by factors such as the specific circumstances surrounding the animal's death and individual coping mechanisms. Finally, responders felt that mental health was not supported formally; however, participants identified strategies for protecting their mental health. While formal mental health support was lacking, participants recognised the importance of safeguarding their mental wellbeing and developed personal strategies to mitigate the potential negative effects of their experiences. Each theme is illustrated with quotes and incorporates the researcher's reflection from an insider's unique perspective.

4.2 Background of Participants

The participants involved in oiled wildlife response possess diverse backgrounds and extensive experience in animal care, making them well-equipped to handle this specialised field. As oiled wildlife response is a specialised field, only a small number of trained or affiliated professionals are usually involved, who are then supported by volunteer staff. The participants were purposefully chosen because of their knowledge and experience as wildlife

rehabilitators and husbandry specialists or had professional backgrounds as wildlife veterinarians and nurses. Only general information about them is provided to protect the participants' identities. The eight participants came from various backgrounds with different skill sets and levels of responsibility in the spill. Participant ages were known by the primary researcher to range between 37 and 69 years. All have worked in their current professional role for over 10 years, and one participant had around 40 years of experience. All participants were animal care professionals with varying seniority and levels of training. They all had some oil spill response training and were part of the National Oiled Wildlife Response Team (NOWRT) or a close affiliation of that team except one participant, a response manager who was contracted to attend the Rena response from an overseas organisation.

Table 4.1 illustrates the brief background information on all participants, showing three as wildlife rehabilitators, one as a wildlife nurse, three as response-trained wildlife veterinarians with two in very senior roles, and one as a response specialist and professional wildlife rehabilitator.

Table 4.1

Interview Participants' Usual Profession and Response Position

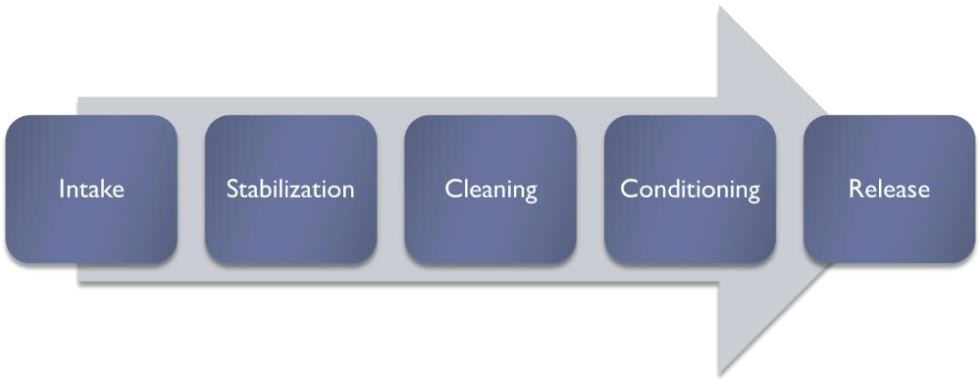
Pseudonym	Usual profession	Experience approximated	NOWRT or affiliation	Deployment	Response Position
Ross	Wildlife Rehabilitator	10 years	Affiliation	3 months	Conditioning team
Orla	Senior Wildlife Veterinarian	15 years	Yes	2 x 2 weeks	Intake team
Yasmin	Wildlife Veterinarian	8 years	Yes	3 months	Intake OR Pre-release team
Gabe	Senior Wildlife Veterinarian	25 years	Yes	3 months	Facility manager
Beth	Wildlife Veterinary Nurse	10 years	Yes	3 months	Wildlife nurse/husbandry specialist
Ian	Wildlife Rehabilitator	10 years	Affiliation	2 months	Conditioning team
Vera	Wildlife Rehabilitator	10 years	Affiliation	3 months	Conditioning team
Olly	Response Specialist/Wildlife Rehabilitator	40 years	Affiliation	3 months	Facility manager alternate

4.2.1 Overview of Process and Positions Held in the Wildlife Facility

The rehabilitation processes within the oiled wildlife facility involves various positions filled by animal care staff, ranging from veterinary experts to husbandry specialists. Within that there are many roles that animal care staff can fill to undertake the rehabilitation processes (Figure 4.1). This process, described as a framework, is required to take the animals from intake to release in a stepwise fashion. Some positions, such as intake and stabilisation (Figure 4.1), require experts from the veterinary profession, such as wildlife veterinarians or wildlife nurses and technicians. Husbandry specialists or wildlife rehabilitators perform other duties, such as cleaning and conditioning (Figure 4.1). Within this rehabilitation process and framework, different activities occur (See Table 4.2). Animals are medically assessed daily using set medical and husbandry criteria to determine whether they continue through the rehabilitation process or are humanely euthanised.

Figure 4.1

From Intake to Release: The Rehabilitation Treatment Framework for Oiled Wildlife in a Facility



Each participant filled a particular position in the oiled wildlife rehabilitation process, depending on their skill, experience, and training. Table 4.2 describes the roles during a spill and the duties undertaken in that position to orient the reader.

Table 4.2

Oiled Wildlife Facility Response Positions

Position	Personal	Role	Role description
Facility manager	Wildlife Veterinarian OR Rehabilitation Specialist	Responsibility for running the oiled wildlife facility	• Full coordination of animal care teams throughout the rehabilitation process, across all positions • Coordination and dissemination of information from the incident command to the facility team, manage media and community engagement, preparation of animals for release, daily reporting to incident command
Intake Team Leader	Wildlife veterinarian and nurse supported by wildlife rehabilitator	Admission and triage of animals into a wildlife facility	• Intake of oiled animals to the facility from the field stabilisation units and capture teams • Triage based on species' threat classification, individual's survivability, resource availability, cultural, legal, and animal welfare considerations • Veterinary assessment and treatment, initiation of medical records, superficial decontamination, initial stabilisation critical care concerns addressed, temporary identification • Euthanasia evaluations based on established criteria, best practice and in cooperation with key stakeholders, euthanasia decisions made or transfer of animals to next stage
Pre-wash care Team Leader	Wildlife veterinarian and wildlife nurse supported by Wildlife Rehabilitator	Stabilisation activities	• Animals are stabilised and prepared for the wash process after health clearance • Identify animals that will not cope with the stressful wash process, and consider euthanasia • Transfer animals that fulfil criteria for wash
Cleaning Team Leaders	Wildlife rehabilitator, wildlife nurse, husbandry specialist	Removal of contaminant	• Wash: Identified animals are taken through the wash process to remove contaminant • Rinse: Animals are passed to the rinse team, and detergent and contaminant are rinsed off • Dry: Animals are given the opportunity to dry off under veterinary and husbandry supervision then transferred to the conditioning team
Conditioning Team Leader	Wildlife rehabilitator, husbandry staff under veterinary supervision	Activities to prepare animals for release	• Feeding, hydration administration, handling, waterproofing assessment, fitness testing • Pre-release veterinary health and husbandry screening and assessment to assess if animals progress to release or are humanely euthanised
Release Team Leader	Husbandry specialists	Release	• Permanent identification placed, complete rehabilitation paperwork, transport to release site, coordinate volunteer engagement
Pathologist	Wildlife veterinarian	Determine cause of death	• Management of the deceased, perform a post-mortem examination to determine the cause of death, manage disposal of deceased

4.3 Unpacking the themes

This chapter now moves to describe each of the themes that were exposed. Each theme will have accompanying examples from the participant interviews to illustrate the exposed theme.

4.3.1 Theme One: Being deployed as per emergency management protocols evoked mixed emotions

Participants were invited to reflect on their emotions upon receiving the deployment notification and being informed of their assignment to the TMOWF in Tauranga. Participants were stationed at a purpose-built, temporary, oiled wildlife rehabilitation facility. While the responses varied across all participants, they were generally positive and included uncertainty, trepidation, and excitement. Overall, six of the eight participants indicated a feeling of excitement to be notified and deployed, describing a chance to use their skills and knowledge as trained or experienced animal care professionals. Most participants provided a variety of positive comments. For example, Ian described the feeling as "A good high" and "It was a buzz." For Ian, one of the key motivators was the positive feelings he gained from being acknowledged and recognised by the management team as having the skills required to respond. This is illustrated through Ian's comment saying he received a "reward from recognition," indicating he felt some reward in being selected as a part of the deployment team. For Ian, utilising the skills he had gained over the years before deployment gave him a sense of pride. Furthermore, being recognised as having the technical skills to be considered for deployment was not only important to him, but it was the basis of his excitement. Ross described similar positive sentiment for deployment:

> 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.

Ross went on to identify that he was unsure of the circumstances or what he might face but was undeterred and continued to express positivity.

> 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!

Ross's positivity may have come from understanding that large-scale wildlife responses in Aotearoa New Zealand are rare; therefore, he was unwilling to miss this "once in a lifetime" opportunity. Yasmin also described her excitement; for her, this was about a new experience different from her day-to-day work and the chance to work alongside colleagues rather than autonomously. Her communication of this feeling was animated, which reinforced the urgency she felt was required to get ready and deploy:

> 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.

This experience of urgency was echoed by Beth, who used such words as "adrenaline" tempered with "excitement." Beth also identified that on notification of being deployed, she had not yet thought through the impact on the animals other than recognising that it was a sad time. She was more focused on the immediate task of preparing herself to deploy.

Despite a sense of excitement and positivity for most participants, the feelings were nuanced with trepidation and uncertainty for some. The two wildlife veterinarians with oil spill training and senior responder roles at the TMOWF felt the most apprehension. While they

indicated excitement about notification and being deployed, this was tempered by some other emotions they expressed, such as trepidation. For Gabe, his initial response was denial and questioning of what lay ahead:

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

Both Gabe and Ross expressed that they had no idea of the scale, complexity or how long they would be deployed at the time of notification and deployment. However, Gabe's feelings associated with deployment differed significantly from Ross's. The difference could have been related to Gabe's deployment experience to other oil spill responses that had not resulted in the full mobilisation of a wildlife response. This could indicate that Gabe's initial denial response was based on a previous encounter. The unknown or uncertainty did not faze Ross; it was exciting, no matter the circumstance. For Gabe, hearing from another team member that, "This is the real one. This is going to be big, the big one," gave him a sense of trepidation as he began to think of some of the implications of deployment, such as the scale and impact on animals. Orla, a responder experienced in the veterinary industry, echoed other participants' sentiments of excitement, purpose and contribution to a significant event. However, this was also tempered with apprehension and links to Gabe's trepidation.

> 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. Also, there was definitely a sense of excitement that I was going to be part

> of it as it was such a huge thing. Part of that was the feeling of being able to actually do something and be involved and contribute somehow to help with the wildlife response. So, it was exciting, but I have to say also the unknown ah, some trepidation.

4.3.1.1 Deployment presented a meaningful opportunity to contribute skills and knowledge

Alongside the excitement, deployment was positively spoken of as an opportunity to utilise their skills to improve the outcomes for the affected animals. Olly, the most experienced responder, familiar with international wildlife response efforts, identified that it was important for him to use his experience and skills to make a difference. Olly's positivity may have been related to experiencing no fear of the unknown because of his years of experience, and he was able to start planning strategies and problem-solving as he received the notification:

> [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.

Several participants indicated that deployment provided an important opportunity to be part of a solution. Participants indicated that overall, they felt that they were "contributing to something big" (Ross and Orla), making a difference through "working towards a common goal" (Gabe) and "feeling of being connected and being a part of something the team was doing (Orla). Beth spoke of having a sense of "clarity and purpose." Similarly, Olly described the importance of actively contributing to the response: "I want to use those skills, and I want to be part of the solution. I don't want to [*pause*s] I mean, I hate like watching something happen and feel helpless."

Therefore, for this cohort, contributing to an unfolding event, excitement potentially based on novelty or the opportunity to put theory into practice, targeted problem-solving, use of specialised skills and training and making a difference were key reasons to be part of the response and summarised the feelings they had about being deployed.

4.3.2 Theme Two: The death of animals impacted participants in multiple ways

The participants' narratives reflecting on animal death at Rena revealed distinct subthemes. They were given the opportunity to discuss the experience of facing the death of animals at Rena and any associated coping strategies. When reflecting on the participants' narratives, it was evident that emotive language was used to describe their feelings. For example, a particularly emotive comment emerged from Ross: "We killed those giants of the sky," which he reiterated throughout the interview multiple times. Narratives from participants when talking about animal death signalled three distinct subthemes. It appeared that the way they experienced death was based on the context of how the animal died. For this cohort, euthanasia was a familiar concept. In their narratives, participants displayed shock at the mass mortality of animals by a human-caused event. Accidental deaths or deaths by misadventure or human error were the most challenging, and feelings of guilt and grief lingered.

4.3.2.1 There was an expectation and acceptance of euthanasia

The process of euthanasia of animals would be undertaken and administered by the veterinary team. Still, the wildlife rehabilitators also contribute by handling and preparing the animals to administer the drug. Participants accepted the death of animals from euthanasia and felt they could cope because of previous exposure to this. It is not unexpected to associate euthanasia when working with animals, particularly during oil spill response, and especially when this involves wildlife. The participants described euthanasia as offering relief for the animals, as mercy expected in an emergency event, and as an accepted as part of their role in the facility. For Ross, euthanasia was not just necessary but had a positive connotation as it

enabled some control over a bad situation. Ross framed euthanasia as a vital component of care. He explained the importance of providing care and support for the animal rather than animals dying cold and alone on a beach:

> 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.

As experienced or trained animal care professionals, the participants faced euthanasia as a common occurrence in their profession across all their daytime roles (veterinary nursing, wildlife rehabilitator or veterinarian). One participant, Olly, had gained extensive experience with euthanasia early in their career working in an animal shelter, where euthanasia was common. This exposure to euthanasia and early career experiences meant that euthanasia was not unique for them. Therefore, they all recognised that it is impossible to rescue and rehabilitate all animals and had a realistic approach. Two participants from a wildlife rehabilitator background stated that being confronted by death is expected. Ian explained:

> I remember working in the triage tents and in the prewash situation. I don't know whether it's a good or a bad thing, but I feel somewhat clinical when it comes to those things. 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. And

> so, I suppose it wasn't hard for me, the triage side of it, where they came in, and they were dead when they arrived. You know full well that somebody has struggled to get them into the box. And for one reason or another, they didn't make it. That's just a given and circumstance. And there are others where euthanasia is going to be the only option. Yeah, I didn't find that at all difficult that side of it.

Across the professions participating in this research, all indicated that their training, exposure, and professional experience allowed some acceptance of euthanasia. Yet, as a contrast for the senior veterinarian, it brought up memories of being a new graduate veterinarian. For Orla, there was comfort in the fact that euthanasia was process-driven and could be worked through logically and objectively to make the right decision for each animal. Still, her response became emotional when this was linked to past trauma as a young veterinarian in training, and the interview was temporarily halted. Orla's lengthy emotional recollection can be understood in two parts: initially about decision-making around euthanasia, followed by triggering experiences from earlier training. Orla shared:

> 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. So, I guess for wildlife, it is a step removed from pets. So, I can still do veterinary stuff, but even then, I am a step removed from the actual wildlife. So, I am helping them as a vet but not hands-on and not seeing the death and destruction that goes with the injuries and illness they have got. So, I don't know if it is personality and if there is nothing I could have done differently as a young vet or actually, sorry, nothing that could have been done differently when I was a young vet to stop that compassion fatigue or whether there should have been other things in place to protect vets from ending up just being unable to practice.

After a break in the interview, Orla wished to continue and strongly emphasised, “And it just [*pauses*] hasn’t changed.” Orla gave a current example:

> If you listen to the vets on the advisory groups, it's just the same stuff that I went through they are going through now. I have made that decision to operate from a distance or in a structure that supports me, so I don’t have to deal with the experience and the hurt and the hands-on emotional type stuff.

Gabe shared some of Orla’s feelings about how training in the past was not as appropriate as it could be and suggested that early training could have made dealing with euthanasia easier. Gabe says:

> I am pretty sure that the teachers at the time thought that they were doing a good job, but I suspect that a slightly more gradual introduction to the idea of death and mortality may have kept some good people.

Coping with euthanasia, in general, was linked to being an inevitable part of their day-to-day role in everyday life. Most participants felt that there was important learning to be gained from each death, which was an essential part of coping with it. Participants indicated that while they do not like it, they are accustomed to it.

Of all the quotes from this research, one of the most striking was from Olly, who said, “We can learn from our mistakes when an animal dies. We must learn from our mistakes, and we must never forget. Those lessons are powerful.” This was echoed by Ross and Ian, who also framed euthanasia deaths as positive because death can be used as a learning tool for other people. However, Beth and Vera had some concerns about euthanasia and the impact on volunteers, especially the less experienced and early career responders. When asked about how they coped both in previous experience in the shelter and in this current situation, Olly stated, “My biggest coping mechanism is that I truly believe that is the best thing for that animal.” For

Olly, recognising that imparting information as part of the volunteer and staff induction process is a helpful strategy to help people understand. Ross and Ian felt that while euthanasia is not a democratic or group decision, it was done in the animals' best interest. They agreed that volunteers should be kept informed of why euthanasia was undertaken and the process of euthanasia, as some volunteers may not have been exposed to this. As a strategy to manage the witnessing of euthanasia, Orla offered options for future spill managers to consider:

> So maybe it is important to take into account how much death people have to see, each day or shift, to allow recovery time for dealing with that, so they can go and talk to their support person and have a big break or whatever. Not everyone in a spill response is a vet that may have had the exposure or training that vets have or exposure to death. And even being a vet doesn't mean that you have developed good coping strategies. Sometimes it is just the ones that got you through.

Like Orla, Olly, Vera, and Beth were all concerned that not everyone exposed to death had the same training. They identified that not everyone working in the facility was an animal care professional, nor were they experienced. This statement reflects that convergent volunteer staff form a large cohort of responders. Of that cohort, not all will have been exposed to or have hands-on experience with the death of animals. The trained or experienced animal care professionals in this group will have had that exposure in many contexts as part of their routine day-to-day work separate from the response. They may have ways to emotionally manage these situations that they already draw from. Orla suggested that it is unknown if they had a strategy to cope or if the strategy was sound. What emerged as more challenging was when they thought about the sheer number of deceased animals and how they died from an avoidable human-caused accident.

4.3.2.2 Mass mortality events evoked stronger emotions and with more intensity than expected

The overwhelming scale of death and its profound emotional impact on participants, particularly in comparison to discussions about euthanasia, highlights the lasting effects of mass mortality events and the candid experiences shared by most responders. The scale of death that occurred was described as difficult, hard, and overwhelming by most participants, including the more experienced responders. For most, it evoked many emotional responses. This was evident more so than when they discussed euthanasia. This was the case for all participants except two, Orla and Olly, who had been exposed to mass mortality situations through their daytime roles. Even a decade later, some participants were still very emotional recalling the mass death at the Rena disaster. In some cases, the comments regarding mass mortality were jarring, but participants were also candid about their experiences. Ross commented bluntly:

> Dead [*pauses*]. 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-fer-ing [*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*].

Participant narrative indicated that euthanasia was expected, but when referencing mass mortality, it appeared that the emotion was still raw even after a long time. Ross described:

> Some die, and you will euthanise some. There will be some that you can't save for whatever reason, or arrive dead at the door, or die as you treat them. But to see those numbers so on that scale that hurt [*pauses*] that hurt.

Other participants recounted how mass mortality events, especially human-caused events, are challenging to cope with. Gabe explained how this was the case even for those who self-identified as being normally resilient to death:

> I would say that I am pretty resilient to death [*pauses*]. 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?' You know? Actually, this is a lot bigger than that.

Gabe acknowledged that not every animal could be saved, referring to the scale of the event and the context of oil spills. Gabe's focus on the live birds was a way for him to cope.

In the acute phase of an oil spill response, the animals have a better chance of being caught and transferred to the facility. Beth recalled an event near the end of the spill when the animals found in the wild were less likely to survive as they had been unable to be caught and brought to the facility for treatment. Beth stated:

> We had a few oiled penguins coming in, and they were all coming in and just abysmal states. They were all emaciated. They were all very hard to save, and we did lose quite a few. But the big memory I have is [*trails off*] is people bringing in bags and bags of dead penguins [*tearful*] they were dead babies. They were all just fledged. Absolutely emaciated pristine, you know, baby penguins, and they were coming in and these clear bags of 10 to 20 at a time.

During recollection of this scenario, Beth had long emotional pauses. It was hard at times for her to continue; therefore, to respect her emotions, we paused the interview and continued when she was comfortable. During the interview, Beth gave examples of how her past and current roles prepared her for accepting death, especially when framed under a euthanasia context. She also mentioned her lack of experience or strategies to manage mass mortality.

> I don't think I had any strategies going into that. I think I had experience in dealing with of death with my previous zoo work where we were dealing with captive animals and also wild animals being brought in, who would often come in in various states of aliveness. But I didn't have any strategies to deal with the babies in the bag; that was the hard one. I mean, the rest of it was all within the realms of what I have experience with and have accepted, I guess. You know, I accept that when we make a decision that shag with a broken wing in the middle of an oil spill has a very, very poor prognosis. I can accept that decision, feel satisfied that it's the right decision and be at peace with it and the time that it was. But the [*long pause, sighed*] the mass mortality of, well, not healthy birds, you know, they were obviously starved to death, which is just an awful way to go. That I didn't have any [coping] strategy for.

Three participants recalled and discussed a specific event where multiple dead birds were laid out on a tarpaulin for photographing for evidence collection and cost recovery. The intention was to visually represent the scale of oil's impact and animal death. Each viewed this situation in opposing ways. Yasmin, a veterinarian, saw the event as positive. She recalled it as scientific communication: “This was a way to visually show people the scale of the tragedy.” However, wildlife rehabilitator Ross felt it was too confronting. He stressed that this would not be done in another context, such as human mass mortality, and felt this display of death was inappropriate and unacceptable. A third participant Gabe also reflected on this incident but reacted to it differently. This visual display of death prompted him to research the impact by

extrapolating numbers, which was a valuable exercise for him in some ways. Still, it highlighted the magnitude of the death. There was a disparity between what was seen in the facility and what was occurring in the wild. The concept of mass mortality also hit the same participant again in a different context. Gabe related this to when animals were removed from the facility for disposal. Throughout the interview, Gabe spoke of his resilience around death as an outcome of his experience, training, and day-to-day role. He usually approached it from a scientist's point of view, being able to partition his emotional responses, except in this case:

> So, I thought I was doing pretty well with it, but we had a huge freezer container full of bodies that we were keeping for evidence purposes for most of the spill. And then, right towards the end of the spill, the insurers and MNZ decided that we had collected and that we had enough evidence of what had happened. No one was going to challenge the cost of the wildlife response based on how many deaths because there was so much wildlife affected that we were able to get rid of them. But because they were oil contaminated, they had to go to contaminated waste. They were not to be buried or returned to the iwi in the way that they normally would be, or returned to sea or anything like that [*pauses*] I thought I was fine with that, and at one point, I was helping load up the trailer, and things and then one of the kaumātua came out to do a karakia and waiata for the release or in their case the bodies going off to the pit [*long pause*] and that really hit me. I think at that point, the realisation of the spirituality of the beliefs around the body is something that I tend to partition away from myself when I am in the process of doing the work, and that really cracked through hard at the time [*long pause*], confronting [*trails off*].

Through this experience, Gabe acknowledged that Māori see the dead animals differently than he may have. The karakia acknowledged the ancestral rights of Māori, seeing animals as tohunga (treasure) but also meant disposal of the animals could be done respectfully. For the

core team who were present, this was an important and unique experience. The karakia over the dead was extraordinarily moving and highlighted a contrast to the usual scientific approach of data collection through post-mortem examination and humane disposal of deceased animals in these circumstances.

While most participants indicated that mass mortality was challenging, one experienced this slightly differently. Orla's role in her usual profession meant she had been exposed to other mass mortality events. The other participants in their roles tended to work one-on-one with individual animals, so while they had experienced death, they had not faced it on a large scale. This could mean this was a more challenging concept for responders than expected.

4.3.2.3 Accidental death in the facility was more challenging than euthanasia

The final sub-theme demonstrated that the accidental death of animals in the facility by accident due to human error, imperfect facility design, or husbandry-related death was the hardest to cope with and the most difficult to manage emotionally. This was the case across all participants except one who may not have been exposed to it in their work area. A comment from Olly highlighted this: "The ones that stand out for me are the ones where I have made a mistake or didn't anticipate something."

All participants felt that accidental death in the facility was the most difficult to come to terms with. For some, recalling the accidental deaths 10 years later resulted in the surfacing of intense emotion. Multiple participants had examples of accidental deaths, and when sharing these stories, there was intense emotion, including tearful pauses. One incident described by Ian prompted a description of "taking that one hard." Ian went on to speak at length about an incident that prompted this feeling:

> The only death that I found very difficult was on my watch. In the clean tent, where there were some young birds brought in, nestlings [*pauses*] now this hadn't been

considered early on as to what would they do with chicks that were found in burrows. But three of them came in. We didn't have an incubator, but it fell on me to make some way of warming, and so we warmed them all right. Using one of those heat lamps [*pauses*] but the heat lamp, for one reason or another, was lowered too low and they overheated and died. I took that one a little bit hard on the chin. And I'm not sure that I could have done much more about it because it wasn't clear if it failed or slipped or that somebody had lowered it.

Beth, a wildlife nurse and Gabe, an experienced veterinarian, experienced the same incident that resulted in the accidental death of one of the animals in their care and recalled similarities and differences. Beth's recall described the incident and the experience of some guilt at the time.

A memory I have of a spontaneous death is one of the penguins drowned in the pools because of a design fault on the little ramps that we had in the pool and had got trapped underneath and drowned. And that I felt really guilty for because it was something so plainly obvious after the death. And it was just such a shame because the bird had gone through the whole process was in the rehab phase, and a design fault was his demise. So that that was quite difficult.

For Beth, the difficulty in the emotion she experienced came from this animal having gone through the many stages of care, all of which were stressful to the animal to still die from something that seemed quite obvious in hindsight. Gabe recounted the rawness of an in-facility death still causing anxiety:

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 [*emphasis added*] feel that it is STILL [*emphasis added*] raw in my mind, even 10 years out.

Gabe indicated that as part of the rehabilitation process, he accepted that when there are large numbers of animals in temporary facilities, accidents will happen. Still, it did not minimise how he felt about this. For Beth and others, the hardest thing to deal with was when animals were doing well and then died from a misadventure, as this was potentially preventable, and the animals had been through many processes to get to this point. When asked about coping mechanisms he may have used, Ian reflected that he coped by trying to understand why the death had occurred. He said that education was important to learn why an animal died and that information could be used to prevent another death or understand the one that happened. He continued to say that there was comfort in attendance of the post-mortems of the animals that died in care, "It means that the death wasn't necessarily a complete waste. Yeah, there is some learning that has been able to take place." During Olly's interview, he reflected more than once on euthanasia and compared it to the death in facility experience. Olly and Gabe reiterated that death by accident in the facility and death by euthanasia was quite different. Olly provided an emotional response:

> Euthanasia [*pauses*] it's different. Because of my work in an animal shelter, for better or worse, I have learned to believe that euthanasia is a gift for animals that are in that situation. If it is for the best, it can be done respectfully and to the best of my ability. Although, in some ways, it still makes me emotional to think about those things. I think I have [*emotional pause, sighed*] I have made my peace.

Like Olly, Gabe echoed the difference between those animals that were euthanised because they were too sick, or accidental deaths in the facility. For most participants, there seemed to be an element of compartmentalisation used to cope. Gabe explained:

> I don't really remember the ones too much that came in and then died. It is not the ones that were weak or sick or ill or even the ones we had to euthanise because they had

> broken wings and so on. It is the ones that were doing well that we lost through misadventure and that was only a couple of them. Like there was a penguin who caught his bill in the mesh and ripped it off, and we had to euthanise him, and then there was the one that drowned. Those are the ones that stay with me [*long pause*] obviously, logically, I know that whenever you're looking after a large group of animals, they will find a way to hurt themselves, but even now, those animals' deaths are still very raw in my mind.

As an experienced veterinarian, Gabe repeatedly reiterated that when large groups of animals are in temporary facilities, there is the potential for accidents. Even with that knowledge Gabe still, emphasised his feelings with words such as "raw" and "flashback." Olly also reflected on the same incident that Gabe described as the penguin who got caught in netting:

> The penguin in the netting was a stress point. That's always going to be where you feel like it could have been avoided. It's going to be a stressful thing. And we need to try to address it with everyone who well, centre with everyone, everyone who is interested in addressing them just in terms of trying to get input from people about how it might be avoided and what lessons should be learned. And let people kind of be heard. Not pointing finger, you know, trying to keep people from pointing fingers saying, 'It's all your fault, it's all your fault, it's all your fault,' but just that, you know, 'Okay, this happened.' There's nothing we can do to change that. But what can we do to [*emotional pause*] to learn from this, and we want all of your perspectives of what we can do to learn from this, not just, 'I'm not going to tell you what we can do to learn from this sort of thing.

It appears that time and prior experience had softened some of the more difficult experiences when working in an oiled wildlife facility, such as euthanasia and related to

acceptance and experience. All participants indicated that their training and current and previous employment had exposed them to the death and euthanasia of animals. However, few participants were prepared or had strategies to manage the accidental deaths and mass mortality, which still triggered emotional responses.

4.3.3 Theme Three: Informal coping strategies for mental health were the main source of support during the Rena oil spill

The lack of structured or formal support for mental health in the veterinary and animal care professions has historically contributed to discomfort and reluctance among participants when discussing the topic. Participants were asked to describe how responders' mental health and wellbeing were supported at Rena, what worked well, and what, if any, strategies, or processes were used during and after stressful situations. An overarching reply was that mental health was not supported in a structured or formal way. Interestingly, this verbal response was frequently accompanied by a wry smile, nervous laughter, or a long pause, indicating that they wanted to be careful in how they phrased their responses. This may be because, historically, it was not as common to speak of soft skills or experiences in the veterinary and animal care professions. Orla discussed her experience of feeling that things within the veterinary profession had remained status quo for new and emerging veterinarians for years and could explain why most participants were demonstrably uncomfortable when asked about how mental health was supported.

Gabe acknowledged the formal review that was undertaken post-Rena that said that the care of the animals was of a high standard, but the care of the responders was unknown. Gabe said about managing responder mental health:

> 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.

With that front of mind, Gabe offered an informal strategy that he used in the facility to help responders' mental health:

> 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.

Having time out with the animals away from the more difficult tasks of decontaminating them, restraining them for feeding or medical procedures, or moving them to clean the enclosures offered some respite for the animal carers.

4.3.3.1 Camaraderie, bonding, and teamwork were essential for mental health support

Unanimously, the participants recognised that mental health support was crucial and identified that mental health was not supported formally and should be. Beth indicated that support was done in a "superficial" way. She felt that although there was previous training as part of the preparation as part of a response team, mental health was not covered.

> I don't think it was something we really discussed prior 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.

Beth's experience of not being taught skills to manage mass mortality or having opportunities to discuss mechanisms to cope with deaths that occur in contexts than euthanasia was important to her. Beth felt unprepared to deal with some of the harsh realities of responding to a wildlife response. This oversight in training might be because technical skills are often the focus of training, and until recently, mental health skills have not been represented. This could

have symbolised a workplace culture of the time where mental health in animal care professionals was not discussed.

Interestingly even though there was no formal strategy, participants could identify strategies in how they dealt with stress, including bonding in a disaster through a shared experience, teamwork and camaraderie and checking in with each other as a form of informal debriefing. Participants felt that working towards a common goal was essential and created a supportive environment through teamwork. Particularly for Gabe, cooperation, and the way the team came together were a particularly rewarding part of the response:

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

Without formal strategies to cope with stress and manage mental health, participants were generally pleased with how they handled this stressful situation. Still, they suggested that it could and should be enhanced formally for subsequent responses. Discussing and training strategies for mental health management in oil spill response is an emerging field that may explain the absence of formal strategies.

4.4 Summary

The experiences and emotions of participants in the oiled wildlife facility during the Rena incident reveal significant themes and challenges that emerged throughout the study. This chapter provided a profile of the participants, including their roles in a wildlife facility, and outlined the themes exposed through thematic analysis. Three common themes emerged with associated sub-themes. Firstly, there were mixed emotions at deployment, including excitement, uncertainty, and trepidation. Conversely, deployment gave opportunities to contribute skills and knowledge to make a difference. Secondly, the experience of the death of animals at the Rena incident was contextual and had three distinct subthemes, including that

euthanasia was acceptable and expected, mass mortality was more shocking than participants expected, and accidental death in the facility was by far the most difficult to confront. Finally, mental health at Rena was not supported formally by respondents who felt it should have been, and participants had their informal strategies to mitigate this. The next chapter will focus on recommendations for this cohort, future research ideas and limitations of this research.

Chapter 5 Discussion

5.1 Introduction

This research explored the lived experiences of eight trained oiled wildlife personnel who responded to the grounding of the Marine Vessel (MV) Rena in 2011. While previous research examines technical skills for disaster response, less attention has been given to mental health strategies and support in animal-related disasters, particularly oil spills involving wildlife. Despite mental health promotion practices utilised by first responders involved in natural disasters such as wildfires, floods, and earthquakes, as well as veterinary professionals involved with mass animal cull events such as foot and mouth disease, there is little research on supporting the mental health of oiled wildlife responders.

As animal care professionals, including veterinary teams, become increasingly involved in disaster responses, addressing the mental health implications of such events is crucial. While technical skills are provided through training and preparedness activities, the issue of how to support responders' mental health during and after response events remains under-researched. This chapter synthesises the findings of participants' interviews in the context of the existing literature and research, focusing on three key areas: (1) Being involved in an oil spill response affects responders' mental health and wellbeing; (2) Witnessing the death of animals is challenging in the unique context of oil spill response and can have ongoing effects on mental health; and (3) There is currently a lack of mental health support before, during and post-response, highlighting the need for professional training that prioritises mental health.

5.2 Being involved in an oil spill response impacts the mental health of wildlife responders

Understanding responders' emotions is critical for a successful response. Participants in this study conveyed a range of emotions when discussing their perceptions and reactions to notification and deployment. These emotions are consistent with existing research on initial reactions to the novel experience of deployment. While anticipation and excitement are common emotions (Braender, 2016), the reality of disaster response can lead to an emotional shift. Participants also expressed the importance of the opportunity to develop new skills or utilise existing skills, which can enhance feelings of pride while contributing to a sense of accomplishment in a complex situation. The participants' initial positivity aligns with other literature that suggests positive responses to deployment are due to the opportunity to gain situational experience (Braender, 2016) and opportunities to enhance confidence (Brooks et al., 2019).

The experiences and emotional challenges faced by participants in the study have highlighted the importance of practical experience and emotional preparedness in oil spill response, particularly when dealing with inexperienced volunteers and complex circumstances. Although the majority of participants in this study had minimal frontline oil response experience, they were dedicated, experienced animal care professionals who had received training in oil spill response. The Rena oil spill allowed them to apply their skills in real-world situations, facilitating the transfer of theoretical knowledge into practical application, which is shown to be positively reinforcing to responders (Braender, 2016). This is shared with research that highlights the importance of practical experience in developing responder skills (Braender, 2016). While participants' emotions leaned toward positivity, this altered as the response progressed and faced evolving and more complex circumstances. For example, participants reported feeling more emotionally challenged when negotiating tasks and processes with inexperienced volunteers. This was seen when they talked about managing some volunteers

who wanted more direct contact with animals instead of following tasks given or became confrontational when response decisions did not align with their expectations or beliefs on animal rescue. This pushback from some volunteers may have been due to their lack of experience in agency-led responses, or they were experiencing less disaster resilience. This phenomenon has been reported in responses that have relied on volunteers (Clumpner, 2008; Sargisson et al., 2012). This finding aligns with Kranke et al.'s research (2017), indicating that people with minimal frontline, crisis or disaster response experiences could have limited experiences to draw from, lessening their ability to manage their emotions adequately. They reported that lower disaster resilience due to less frontline experience and exposure to response events could mean more pressure or heightened emotions while also dealing with interpersonal conflict or attempting conflict resolution. Kranke et al. further suggested that being emotionally prepared to face these occurrences or pre-exposure to traumatic experiences could aid responders in alleviating this effect.

According to Kranke et al. (2021), some existing research on disaster or traumatic events has tended to focus on responders' initial reactions to deployment rather than emotional preparedness. Instead, they argued that first responder emotion requires careful examination considering all factors of a response before deployment to a disaster event. This would help clarify how best to support first responders' mental health through sustainable practice as part of the disaster management journey. In the current study, the responders indicated they had little understanding of what the overall response may entail or its potential impact beyond the initial deployment phase. Therefore, they felt emotionally underprepared. This finding is consistent with other research that now emphasises the importance of emotional preparedness as part of emergency response taking a more proactive approach.

The impact of prior exposure to traumatic events on first responders' workplace stress and strategies for creating a positive work environment and maintaining resilience have been

explored in previous research highlighting the significance of social bonding (Kranke et al., 2021) and the need for embedding mental health strategies in training. Earlier research has explored the relationship between repeated exposure to traumatic events and negative workplace stress for first responders (Thornton et al., 2020). However, responders in this study did not view their prior experience and exposure to trauma negatively. They reinforced strongly through their narratives that prior exposure to traumatic events, training and other work-related experiences as an animal care professional had prepared them with some insight and expectation. Conversely, they also reported that there were times when they felt under-prepared during the oil spill, and they needed to utilise different strategies to help with the situation. Participants also discussed practices they used to create positive workplace environments, such as formulating their own support techniques to mitigate feeling overwhelmed or isolated from their usual support networks. Specifically, they relayed how they bonded as a group, using unstructured but consistent check-ins, particularly after challenging or confronting circumstances. It appears that responders who recognise social bonding as necessary when dealing with challenging circumstances may achieve a more positive response experience (Kshtriva et al., 2020), balancing the focus on the negative aspects. These results reflect those of Lanza et al. (2018) and Kranke et al. (2021), who also found that social connectedness in dealing with emergency response and critical incidents was crucial for responders and had the potential to enhance the experience positively. Existing research on resilience has shown the importance of embedding mental health and wellbeing strategies into training pre-response (Brooks et al., 2019). Participants' strategies, such as debriefing, could be enhanced if they included repetition or training revalidation exercises to keep skills current which could prevent skill deterioration (Woodman et al., 2021).

The emotional toll on wildlife responders during large-scale environmental disasters, such as the MV Rena oil spill, remains unclear, highlighting the need to examine the impact of

the human-animal bond and mental health challenges in this context. The impact of the MV Rena oil spill has been studied, with one study reporting that 428 live seabirds were collected from surrounding beaches and admitted to the Te Maunga Oiled Wildlife Facility (TMOWF) for treatment (Gartrell et al., 2019), while 2063 dead seabirds were also recovered (Gartrell et al., 2019). While there is a substantial volume of literature on euthanasia stress in veterinary practice (e.g., Moses et al., 2018; Newsome et al., 2019; Reeve et al., 2005; Scotney et al., 2015) and the effect of euthanasia in large-scale veterinary public health disasters (Makita et al., 2015), the emotional toll on wildlife responders responsible for recovering or euthanising wildlife remains unclear. The current research is believed to be the first study to examine this topic, which raises questions about the impact of the human-animal bond, which is noted across numerous animal care professions (Hall et al., 2004; Stowen, 2019; von Dietz & Gardner, 2014). The Rena responders dealt solely with wildlife and not domestic species. However, they consistently described their emotional challenges when dealing with the overwhelming scale of wildlife deaths during the rescue. These results confirm recent research emphasising the existence of human-animal bond independent of animal species (Ratschen et al., 2020). This is a critical consideration for future responses, as mental health challenges may not be exclusive to witnessing domestic animal suffering, as commonly reported in the veterinary profession.

Undertaking large-scale animal rescue, recovery, or euthanasia poses significant logistical and situational challenges. These include remote work, limited resources, and reduced avenues of connection with loved ones. While such complexities are expected, the fast and unpredictable circumstances in disaster responses may further affect responders' mental wellbeing, depleting their emotional resources (Kranke et al., 2021). While participants mentioned that bonding as a group lessened the adverse effects, what requires further understanding is the long-term effects on mental health that may not become evident until responders return to their normal work environments and be given the time to reflect.

Therefore, formal debriefing activities should be utilised post-response as part of a demobilisation process (Burnett & Wahl, 2015).

Results from the current study have provided clear evidence that wildlife responders who participate in critical incidents experience emotional trauma, positive encounters, and challenges similar to those faced by other first responders. This includes navigating the intrinsic value of life (human or non-human), recognising suffering, rescuing, and recovering injured, and confronting death. Research has indicated that responders who face these complex situations gain "emotional intelligence' (Sassi et al., 2021, p. 5), may experience compassion satisfaction, or resilience (Burnett, 2017) or may have the emotional resources to be a form of social support for fellow responders (O'Neil & Kruger, 2022). As demonstrated by this research, the subjective experiences participants shared from their regular routines and some exposure to challenging situations may have protected them from emotional harm, such as compassion fatigue or moral distress. It may be argued that their previous exposure to making complex decisions in animal welfare and difficult ethical decisions as part of their normal routines have acted as protective factors for them. This is supported by Kranke et al. (2022), who suggest that decision-making after having had prior disaster experience enhances problem-solving and the ability to cope with demands. Nevertheless, this investigation revealed that even experienced responders still felt powerless when confronted with the sheer magnitude of animals affected in the wild. In this instance, participants expressed grief and loss, particularly when presented with circumstances beyond their control.

While grief, compassion fatigue, and moral distress are commonly discussed in human health sectors due to working in caring professions (Allen et al., 2017; Tigard, 2018), they are less frequently discussed in the context of animal care professionals. This research supports that grief, compassion fatigue, and moral distress are not exclusive to human healthcare professionals and can affect those caring for animals. It has been proposed that the veterinary

profession can improve the management of these issues by adopting strategies from human healthcare equivalents (Gartrell & White, 2021). Due to the complex nature of disaster response involving the rescue of animals and as the frequency of disaster events escalates, the ability of responders to process grief and manage anxiety will become more crucial. Globally, there are growing concerns about how environmental disasters, whether human-caused or natural, can contribute to physical environmental damage and result in staggering economic cost recovery (Laffon et al., 2016). With increased maritime traffic and climatic events, the frequency of oil spills is also likely to increase (Chilvers et al., 2021). As a result, first responders are more likely to be deployed or redeployed from back-to-back responses, potentially experiencing cumulative trauma, or feeling overextended. Responders will have to navigate feelings about environmental destruction from disaster and climate change, and the human-animal bond intensifies the challenges to positive mental health and wellbeing.

5.3 Witnessing animal death is challenging in the unique context of oil spill response

First responders who feel a strong connection to a broader cause and are valued for their unique skills and contributions are more likely to experience a sense of fulfilment, pride, and motivation (Brooks et al., 2019), even under unpredictable circumstances. This connection can lead to positive mental health outcomes and a general sense of positivity towards deployment and during the response. Acknowledging the unique skills of responders during deployment could also explain motivation (Braender, 2020), and participants in this study demonstrated this. Recent research has reinforced the importance of emotional connectedness (Kranke et al., 2021), which was also observed in the current study. Participants shared examples of how they connected with their team and how it improved their ability to cope, care for their colleagues, and feel resilient in the face of adversity. These emotional connections had a positive influence on their deployment experience.

The challenging and emotionally demanding nature of animal care professions, particularly in the context of oil spill response involving wildlife, significantly impacts the mental health of professionals, with factors such as grief, euthanasia, and resource distribution contributing to heightened stress and limited emotional recovery opportunities. Animal care professionals, including veterinary professionals who act as first responders, often face grief and loss, which can significantly impact their mental health (Makita et al., 2015; Wasson & Wieman, 2018). This is likely because of the unpredictable, dynamic, and complex environments in which these professionals work (Sassi et al., 2021). In the unique context of an oil spill response involving wildlife, the death toll of animals is high, and euthanasia of animals is more frequent (Henkel & Ziccardi, 2018) and the effect of human error causing harm to animals (Wallis et al., 2019). It is suggested that emotional recovery is not always possible after euthanising animals when staff have an immediate return to tasks leaving no time for reflection or debriefing (Hewson, 2014).

A challenge for veterinary and rehabilitation teams in oiled wildlife response is accepting decisions of euthanasia based on resource distribution (Massey, 2005), including time, driven from operational and logistical perspectives. The unpredictability could heighten wildlife responders' feelings of being emotionally underprepared. Previous literature has documented the negative impact on mental health experienced by animal care professionals causing euthanasia stress (Moses et al., 2018; Newsome et al., 2019). Results of the current study indicated that no participants reported the experience of euthanasia stress, but some did mention emotional distress concerning the sheer number of animals affected and particularly the number of animals they could not assist who had died in the wild. The realisation of the participants of the extent of damage to wildlife and the remediation efforts required was challenging for them and affected the way they approached the event.

The emotional impact of human error in the MV Rena oil spill raises concerns for the mental health of wildlife responders and can potentially exacerbate compassion fatigue or moral distress. The MV Rena oil spill was described as Aotearoa New Zealand's worst maritime disaster in the country's maritime history (Schiel et al., 2016). Previous research reported that the cause of the Rena oil spill, like other oil spills, can be attributed to human or system errors (Henkel & Ziccardi, 2018; Saran et al., 2011). Human-caused disaster events appear more emotionally debilitating than naturally caused events (Alexander & Klein, 2009; Lanza et al., 2018; Wasson & Wieman, 2018), and this was echoed by the participant narratives in this study. The emotional impact of human error causing death or disablement of an animal in the Te Maunga wildlife facility was felt far more among the participants, particularly the notion of sadness and guilt. This was different to their feelings in response to euthanasia, which given the potential of elevated frequency of oil spill response, would have been expected to impact responders more. Such a phenomenon was concerning because even within the dynamic and potentially volatile environments such as oil spill response and the thorough planning undertaken as part of a response, human error is inevitable (Gartrell & White, 2021).

The current study uncovered evidence of distress from the participants when they were exposed to animal death. Participants' narratives indicated that the sheer magnitude (2063 deceased) of avoidable deaths of animals in the wild was distressing to them; by comparison, the distress to the small number of accidental deaths in the facility seemed to evoke disproportionate emotions, which was an unexpected phenomenon. Current research indicates that euthanasia stress is of great concern for animal care professionals, whereas these participants did not find that to be the case. This suggests the Rena wildlife responders adapted to the stress of euthanasia through coping mechanisms, resilience, and a strong professional identity, protecting their mental health and potentially buffering adverse effects in challenging situations. While witnessing the suffering of animals, including death, is inherently stressful

(Moses et al., 2018; Yeung et al., 2017), this recent phenomenon moved away from the focus on euthanasia. For these responders, it seemed that the stress was focused on dealing with the mass deaths caused by human error and the unexpected deaths that occurred in the facility, also related to human or system error. This is significant as the wildlife responders may not be emotionally prepared for how the impact of human error may make them feel. This raises concerns for the mental health of wildlife responders, as they will be required to navigate large (in the wild) and small (in the facility) scale incidents of human error that can potentially exacerbate compassion fatigue or moral distress. Results from the current research also contribute to the increasingly important topic of engaging a more holistic view to understand the dynamic global environmental challenges. Doing so may highlight the interconnection and interdependency of the environment, the animals (including wildlife), communities and humans (Shervington & Richardson, 2020; Stoddard & Hovorka, 2019).

The importance of resilience and coping in emergencies, specifically within the context of veterinary professionals and animal care workers, has been highlighted by recent research. Recent research has suggested that resilience and coping are vital in emergencies (Yasien et al., 2016), particularly as environmental disasters become more prevalent (Chilvers et al., 2021). Veterinary professionals and animal carers encounter similar challenges to those in the human healthcare sector (Moore et al., 2014; Yeung et al., 2021) and disaster response teams (Yasien et al., 2016), including oiled wildlife response teams. However, the research on oiled wildlife response is limited, and it remains unclear whether animal care professionals have the opportunity to build resilience as part of their current training. Current thinking points towards these skills being developed before deployment (Kranke et al., 2021). The results of the present study indicate that reflection, coping, and resilience were critical elements for protecting mental health in the Rena wildlife responders.

The current study revealed that although the participants did not explicitly mention resilience, their narratives demonstrate strong evidence of coping and resilience, highlighting the significance of camaraderie and collective trauma response in disaster situations. As this research was conducted a decade after the event, the terminology and nomenclature around resilience and coping strategies were not as embedded as currently. According to existing research, resilience can be developed from their lived and professional experience, and the intense feelings of comradery prove vital in disaster response when working toward a common goal (Brooks et al., 2019). While elements of collective trauma that responders face can affect the entire group and increase distress and tension (Bender et al., 2021), bonding and camaraderie in a disaster can enhance the experience positively, as it did for the Rena wildlife team.

The veterinary profession is shifting its pedagogy to include professionalism and professional identity as critical components of veterinary training (Gordon et al., 2023). Some of the training and implementation of tactics to mitigate stress and burnout issues emphasise the importance of teamwork (Moore et al., 2014). The findings in this research are consistent with this critique of traditional training in the veterinary profession and the focus on technical skills rather than coping and resilience skills. Veterinary education and first-responder training have primarily focused on developing technical skills (Gordon et al., 2021, 2023; Woodman et al., 2021). First-responder training usually focuses on problem-solving, technical skills, teamwork, managing a dynamic environment (Turoff et al., 2011) and modifying currently held technical skills. This approach (technical training only) has been criticised in recent literature (Woodman et al., 2021) because it does not address the issue of training to manage stress, burnout, and other impacts from responding alongside other skills training. The participants' narratives in this study indicated they possess a strong professional identity which may act as a protective factor from some challenges faced by their peers in other animal care professions.

Although participants in this research demonstrated some resilience and coping mechanisms, this may not be adequate to address future increases in oil spills and global climatic events without targeted training. Managing resilience and coping before deployment (Kranke et al., 2021) will be crucial as it moves beyond the traditional tactical and technical skills taught to first responders (Woodman et al., 2021) and veterinary professionals (Armitage-Chan et al., 2016, Armitage-Chan & May, 2019; Gordon et al., 2021, 2023).

5.4 A wrap around approach to mental health support before, during and post-response is currently lacking

One of the key implications of this research is that mental health processes should be integrated into all phases of oil spill response preparedness (Yeung et al., 2021; Ziccardi et al., 2011) with training incorporated into pre, during and post-response activities. Responders to the Rena disaster consistently drew from past experiences to support themselves and each other in the absence of this incorporated into preparedness training. While reliance on personal experience and resources to cope with challenging events has been shown to protect against burnout (Ogińska-Bulik & Michalska, 2020), wildlife responders will likely require more integrated training in each response phase. This will ensure that, eventually, wildlife responders can achieve sustainable positive mental health.

The current research provides convincing evidence that responders' trauma is not exclusive to the human health profession. Recent literature, particularly in social work, has signalled "emotional preparedness" (Kranke et al., 2021, p. 249) as key to protecting mental health while supporting others in a disaster. Participants in the current study stressed the significance of being emotionally prepared but also made clear that they were underprepared. Other research has underscored the critical role of emotional connectedness for those exposed to traumatic events (Bender et al., 2021). To promote emotional connectedness, it is reasonable to equip responders with techniques (Bender et al., 2021) and skills training, including exposure to other events (Kranke et al., 2022). Despite sharing stories of how they fostered

emotional connectedness with volunteers and other responders during the spill, participants in this study indicated that emotional preparedness is not currently recognised or taught as part of oiled wildlife response training.

Effective response efforts in disaster situations often require collaboration between multiple agencies with diverse backgrounds and skill sets (Ziccardi et al., 2011). According to some authors, professionally trained first responders require knowledge about emotional preparedness to support the convergent untrained volunteers and other colleagues (Brooks et al., 2019). In this study, participants highlighted the significance of supporting each other in challenging times and emphasised the importance of checking in and connecting, particularly when mistakes have been made. They also reiterated that no formal training was undertaken to facilitate this before responding.

Literature has indicated that emotional connectedness can potentially mitigate the adverse effects of traumatic experiences (Bender et al., 2021). Such connections can improve "trust and vulnerability" (Bender et al., 2021, p. 450) through shared experiences of mutuality. The information drawn from the participant narratives suggests they proactively developed emotional connectedness although not formally trained. This demonstrates that such training would be useful to implement prior to a response as well as trained debriefing techniques for wildlife responders. While the Rena responders informally debriefed and utilised ways to support others, it is unknown if the absence of formal training in these skills was detrimental to them. Research has suggested that trained debriefing techniques may prevent the occurrence of vicarious traumatisation when unintentional harm is inflicted on a listener when information is informally debriefed (Mathieu, 2012; Saakvitne, 2002).

5.5 Summary

This chapter has provided a discussion on key areas drawn from the narratives of the participants of this research. The discussion was conceptualised into three principal areas of concern. Firstly, involvement in an oil spill response involving animals will affect responders' mental health. Managing that will require opportunities to develop emotional preparedness. Secondly, witnessing the death of animals is challenging, particularly under certain circumstances. Recognising and working towards emotional connectedness within the response network during deployment will assist. Finally, mental health support before, during, and post-response efforts is currently lacking. It becomes apparent through this research that to address these concerns, individuals and agencies must acknowledge that first responders who receive both mental health training alongside technical training will be better emotionally equipped to develop resilience than those who do not. The concluding chapter will focus on recommendations and conclusions about the three fundamental issues that persist for wildlife responders in oil spill response efforts.

Chapter 6 Conclusion and Recommendations

6.1 Introduction

The mental health of oiled wildlife responders is a concern that has not received full or adequate attention in research. With the limited research and literature in this area, particularly in Aotearoa New Zealand, this research endeavoured to add to the body of knowledge. This research aimed to fill this gap by exploring the mental health of oiled wildlife responders who responded to the 2011 Marine Vessel (MV) Rena oil spill disaster. The findings reveal that responders' mental health and wellbeing was affected by the context surrounding the notification and deployment period, the situational effects that led to the death of the animals and the absence of planning and preparedness to address mental health. These results reveal that while trained oiled wildlife responders draw from professional experience to manage difficult things, the impact of their encounter signalled the need for better support and preparation strategies to address mental health. This chapter will summarise the findings, followed by a discussion of the limitations of the research and recommendations for future practice, policy, and research.

6.2 Summary of Key Findings

This research has shown three key findings regarding the mental health of oiled wildlife responders.

6.2.1 Key Finding One: Responding affects the mental health of responders

Firstly, responding to an oil spill event involving wildlife has been shown to affect the mental health of trained oiled wildlife responders. Notably, it appeared that the notification and deployment period evoked mixed feelings in responders, with emotions changing over the course of the spill. These emotional changes were in response to the evolving circumstances that were presented to them over the course of their deployment. For these responders, an

example of the mixed feelings included the importance of being recognised as one with skills to contribute and to be chosen for deployment. This had positive associations represented in their narrative, and it appears this positively reinforced their sense of self, pride, and self-esteem. This recognition also provided the responders with a significant opportunity to utilise their training, skills, and experience in a real-life situation which they also found positively reinforcing. The contrasting evidence of the mixed emotions was that although these participants were experienced animal care professionals, their narratives indicated they felt emotionally underprepared for the task ahead of them and, at times, overwhelmed.

6.2.2 Key Finding Two: The experience of the death of animals at Rena was dependent on context

The emotional impact of human error-caused animal deaths on Rena wildlife responders was greater than predicted. The second finding has shown that despite the Rena wildlife responders understanding, training and previous practice experiences involving euthanasia, or mass death events, the sheer magnitude of animal death due to an environmental disaster caused by human error seemed to have an unexpected impact on the participants. Participants' narratives seemed to imply that human error causing death or disablement of animals was a greater concern and evoked more emotional effects on them than they themselves anticipated. This was articulated in two ways; the sheer magnitude of death of animals in the wild was shocking to responders, and the small numbers of accidental death in the facility from human error evoked the strongest responses from the group. This indicated that human error on a large (death in the wild) or small scale (accidental death in the facility) had the most significant emotional impacts. Current research often focuses on euthanasia stress in animal care professionals. However, from their narrative, this group seemed prepared for the prospect and process of euthanasia. There are two possible reasons for this; firstly, potentially due to their experiences in their day-to-day routines before deployment desensitised or

prepared them for this. Secondly, simply because they already work in a wildlife environment where euthanasia and triage practices leading to euthanasia decisions are more stringent compared to small animal practice.

6.2.3 Key Finding Three: Mental health promotion and protection was not incorporated into policy of oil spill response

The absence of a mental health promotion and protection policy during the Rena event, highlights the need for better integration of mental health strategies in response planning and training for first responders. At the time there was no policy to develop or enhance resilience or training in ways to achieve this during the Rena event nor were they integrated into the oil spill response training policy documents. It was heavily reliant on the personal emotional resources of the individual. Despite this absence, the participants in this current research all demonstrated some levels of resilience. This was evidenced in how they articulated their experiences and during the response how they persisted even in the face of difficult things. Their sense of resilience appears to have acted as a protective mechanism supporting them both when responding and post-response.

Research indicates that resilience is important in first responders, and training to achieve this is necessary. The participants emphasised that to maintain and improve their resilience, health and safety and other occupational health strategies in this space cannot just focus on risk management. They feel it should encompass mental health as well. This study highlights the need for better integrating mental health strategies and planning into response strategies. Responders were found to be resilient, but their mental health was not prioritised in planning and preparedness processes. This left the onus on the individual responders to develop and initiate their own positive mental health strategies, which is unacceptable by today's workplace mental health protection and care standards. It emerged from this research that the experience the participants had were used as a protective measure of their mental health. Recent

research has started to raise issues such as achieving resilience in first responders, particularly when dealing with disasters. The emerging research is beginning to investigate how that might be applied in training and preparedness activities for responders.

6.3 Limitations of the Study

While the qualitative methodology and methods were instrumental in giving a voice to the animal care professionals who responded to the 2011 MV Rena spill, it is essential to acknowledge some of the study's limitations. The small sample size of eight participants allowed in-depth knowledge and intimate interviews, but it may reduce the generalisability of the findings to the broader response population. Additionally, a narrow cohort of participants may limit the transferability to other settings or contexts.

Another potential limitation is the possibility of recall bias, given that the interviews were conducted after a decade had elapsed since the incident. The participants' recollection of events and experiences may have changed over time, with time perspective as a protective measure against trauma (Hansen et al., 2018). Ideally, future research could be undertaken immediately post-response to capture the immediate feelings and experiences of the respondents without the potential for recall bias.

6.4 Recommendations for Practice, Policy, and Research

Promoting mental wellbeing in the workplace is crucial, particularly for groups at elevated risk, such as first responders and veterinary teams. It is now evident that accessible support practices and interventions at various levels are warranted. Developing a mentally healthy workplace is critical (Barry, 2007; Harvey et al., 2014; Petrie et al., 2018) and requires practices and interventions that exist at a community, organisational and individual level. This is particularly for groups potentially vulnerable or with elevated risks of being affected by the complex environment of being a first responder (Pietrantoni & Prati, 2008), including those working in a veterinary capacity (Black et al., 2011). Opportunities to support mental health in

ways that are accessible are increasingly important for those reluctant to seek assistance for mental health support and includes first responders (Russon et al., 2023) and veterinary teams (Dow et al., 2019). Reluctance to seek help is not the only prohibitor (Dow et al., 2019; Russon et al., 2023) but embedding practices to ensure help-seeking is undertaken early (Petrie et al., 2018) to act as prevention may be key. While many unanswered questions remain from investigating this cohort's lived experience, it highlights knowledge that may have been previously unexpected or unknown. This research has highlighted some critical areas where primary prevention and secondary intervention can be utilised.

Wildlife response during oil spills has seen significant progress over time with a focus on treatment and process for the animals. Processes have evolved in how wildlife is dealt with in oil spill circumstances. The general public and wildlife responders recognise the importance of responding to spills involving wildlife. For animal care professionals, this importance is deeply rooted in their codes of practice, welfare, and ethical conduct. However, the impact on responders' mental health has received less attention. This research underscored the importance of understanding and addressing the mental health of oiled wildlife responders, particularly as the potential for climatic events and disasters is increasing. These responders also acknowledge that their mental wellbeing is often neglected. From this, a prudent step would be to develop the current response policies and codes of practice to shift focus from responder technical techniques to focus on the importance of supporting mental health and wellbeing. Doing so may act towards managing burnout, compassion fatigue, or moral distress in this cohort.

Effective strategies and recommendations for responding to animal-related disasters, specifically oil spills, can enhance workforce preparedness, response, and post-spill activities. The insights gained from this research expand the current understanding of this workforce. The ideas presented in these recommendations could be a useful direction for a workforce that focuses on responding to animal-related disasters, including oil spill response. The

recommendations provided here require consideration across all three phases of an oil spill which are: (a) pre-spill planning and preparedness, (b) during spill response, and (c) post-spill demobilisation activities. Therefore, an integrated approach across all three phases is considered particularly advantageous. Approaching emergency response across different phases is becoming more apparent in the literature. Current examples exist, such as those endorsed by the World Health Organisation (WHO) who suggest that mental health should be an integrated part of an emergency response plan (WHO, 2022). Taking this approach into consideration forms the basis of the recommendations by drawing from this research and participant narratives. Figure 6.1 provides an illustrative summary, forming the bedrock of the framework proposed specifically dividing the response into phases. Its overarching concept is to recognise the risks and issues and reduce the impacts on responders, (considering primary preventions) and restore personnel after a response, with resilience achievement central to the recommendations. The intention is that this may allow response agencies and managers to treat each phase of the response as modular, utilising options in the recommendations (Table 6.1) to build a program suitable for their circumstances. This could involve using each distinct phase or all of the phases combined. A modular approach becomes a framework for practice and is transparent for responders and agencies alike. This approach had similarities with the WHO approach of building a framework and making preparedness a central component of emergency response with a focus on mental health (WHO, 2005, 2022).

Figure 6.1

A Modular Approach to The Recommendations Across Three Phases of a Response, With Resilience as a Central Goal

6.4.1 Recommendation One: Prioritise pre-disaster planning to develop emotional preparedness

Incorporating emotional preparedness into pre-disaster planning and preparedness phases of wildlife response is a crucial recommendation highlighted in this research. The first recommendation emphasises two critical components of disaster response, the pre-disaster planning and preparedness phases in phase one. The focus in this phase should direct towards recognising what some of the risks may be beyond health and safety. Currently, most training for wildlife responders in the preparedness and planning phase has focused on technical skills

and health and safety. However, as this research shows, pre-disaster training opportunities are essential to assist responders in developing emotional preparedness, particularly when considered as primary prevention. This is a shift from using mitigations after the deployment concludes, where impacts on responders are addressed as a secondary intervention. This recommendation sits in two key areas of the pre-disaster and preparedness phase. The first considers the pre-spill training activities before deployment as part of preparedness, and the second considers activities at the point of deployment.

6.4.1.1 Pre-spill Training Activities

The implementation of training and skills development for team leaders and response managers is recommended to enhance their ability to manage difficult situations and address workplace mental health concerns in the context of a wildlife facility. The recommendations suggested that will be later utilised in the response phase. The proposed strategies and training can create elements of emotional preparedness by providing team leaders with confidence and skill sets to manage some of the difficult things they may face. In practice, these skills will allow leaders to gauge where the team is placed from a workplace mental health perspective. Tools taught and workshopped in the preparedness phase should include activities for teams and individuals, facilitating a collective approach to mental health. For teams in particular, the integration of informal debriefing skills such as low impact debriefing (Mathieu, 2012) and micro practices (Nissim et al., 2019). For the individual, emotional sorting tools such as the four A's framework (ask, affirm, asses, and act) to identify and manage moral distress (American Association of Critical Care Nurses, 2020; McCue, 2010), personal reflection and debriefing skills (Schmidt & Haglund, 2017) may all be appropriate. These can be taught for use in real situations of the response, including a wildlife facility. These tools that have been used successfully in the human health care sector may assist the team leaders in identifying issues in their teams and therefore be able to direct support. This training and opportunity

should be provided to core teams, team leaders and individuals through in-house and outsourced workshops and training activities. This recommendation is an adjunct to traditional technical and tactical response training. Because of skill decay, it is also suggested that there is a revalidation process to keep the skills current (Woodman, 2021).

6.4.1.2 Assessment at Deployment

The assessment of emotional readiness before deployment can be facilitated using validated tools. The second element of the first recommendation is undertaken at the point of deployment. Individual staff assessment may be useful to assist managers in understanding the emotional position of their workforce before deployment. Two such examples that are currently utilised include the professional quality of life (ProQOL) scale or a gauge of distress scale such as the Kesler distress scale (K10). These techniques have been utilised in other agencies that deploy personnel to gauge emotional readiness. Firstly, the ProQOL scale is a validated tool for assessing the professional quality of life. Importantly this is a non-diagnostic tool but a free and widely used professional quality of life measure (Stamm, 2010). For the context of this research, ProQOL may be of particular use because of the subscales that measure compassion satisfaction, burnout, and compassion fatigue. These issues are referenced in the literature as an issue for this cohort. Importantly each scale can be used independently or together depending on the unit's needs. Secondly, the K10, is a 10-item questionnaire based on questions about anxiety and depressive symptoms (Blanc et al., 2014). This tool has seen application in military deployment and operational contexts and has been suggested for use by health agencies (Sampasa-Kanyinga et al., 2018; Health Navigator New Zealand, n.d.). This tool evaluates an individual’s stress level before deployment (Blanc et al., 2014). It could be argued that a high distress result would mean a reason not to deploy an individual. Instead, it gathers intelligence for where to direct human resources and gives an overall impression of the team evaluating distress over the last 30 days. This tool may be useful for oiled wildlife response managers

when considering where to place responders in a facility. For example, if one responder shows a higher level of distress, they may not be suited where they face mass mortality; however, they may be suited in another area in the facility. Although yet to be addressed is whether this single-point assessment is appropriate for this team.

The utilisation of a professional quality of life assessment tool during the response phase can offer emotional preparation and valuable information for deployed responders. Efforts in this area of the response phase could better emotionally prepare responders for the events to come or provide them with some self-awareness as they are about to be deployed. Importantly, K10, like ProQOL, is a non-diagnostic non-pathologising tool with no intention to diagnose specific disorders. The purpose is to provide further information about the person to be deployed. Another benefit of this tool is that it does not need to be administered by a professional. The utilisation of undertaking a professional quality of life assessment and a distress scale at the point of deployment gives a baseline of the individual at the point of deployment. Knowing this factor at the point of deployment would allow response managers to direct human resources to appropriate sections in the response.

6.4.2 Recommendation Two: Foster the establishment of emotional connectedness in disaster situations

The effective integration of training activities and emotional connectedness within response teams is crucial for enhancing social support and strengthening the team's ability to face unpredictable events in disaster response. The second recommendation calls for the utilisation of training embedded from preparedness phase one into phase two during the response phase (Figure 6.1). The expected outcome is that it may establish and maintain emotional connectedness. Developing and maintaining emotional connectedness will enhance social support, thereby strengthening the team, particularly if they need to face unpredictable events and navigate complex environments. Participants in this research consistently described the close bond they felt with their group, so the intention is to capitalise on that association and

bond. A strong rapport between response teams and social support has been shown to be critical in disaster response (Kranke et al., 2017); therefore, training activities during the deployment phase will support the already close bond that the responders have. Doing so will encourage and maintain the emotional connectedness they already display. The undertaking could be achieved through opportunities for team leaders to integrate into the daily briefing and debriefing. Within the team meeting, each day will allow responders ample opportunity to voice concerns. Assuming the team leaders are trained in debriefing and on-the-spot subjective assessments, as described in recommendation one, this will benefit a team leader, giving rise to an understanding of how their responders are feeling. Doing so will provide opportunities for emotional connectedness and an empathetic response from the team leaders. It also allows the team leaders to direct the responders to further assistance if needed.

The importance of incorporating formal processes and comprehensive training, including mental health support, is crucial for successful disaster response and fostering camaraderie among wildlife responders. During the response phase, responders are deployed onsite and undertake their roles as wildlife responders. As responders fall into an operating rhythm, the skills training they have received in the preparedness phase could utilise pre-trained skills or interventions that were trained and established in the pre-disaster phase. For this to be successful, various tools should be available to the team leaders, allowing them to have autonomy, choice, and opportunities to modify interventions according to their specific situation. Soft skills such as mental health training can often be optional or considered an add-on to training; this should change. Checking in with each other, informal debriefing with the team and discussing difficult incidents after they occurred enhanced the camaraderie among responders. This is an essential component in successful disaster response. While the self-identified informal debriefing undertaken by the participants in this research reinforced

camaraderie and teamwork, a formal process as part of training policy would better support this.

Simple subjective tools can be integrated into the team dynamics and daily briefing and debriefing activities. It has been shown in other contexts that teamwork is important to mitigate the effects of stress and enhance the team (Moore et al., 2014). Ways to assist could include debriefing tactics taught to teams to minimise the effects and the use of emotional sorting tools. Examples could be the embedding of low impact debriefing techniques, which is shown to be an important technique that can potentially reduce vicarious trauma, which may be present in a wildlife facility as people share experiences they are confronting. Vicarious trauma is understood to be when trauma is experienced through the stories and experiences of others (Mathieu, 2012). Criticism of the technique may be the lack of immediacy, and some employees may resist implementing it if they have had no experience or training in the technique (Kapoulitsas & Corcoran, 2015). Therefore, training, and workshopping opportunities will be required for this technique to be effective in a wildlife facility. This communication technique can be taught to the team leaders and modelled by staff to encourage a culture of managing vicarious trauma in a wildlife facility. As a form of informal debriefing, it is a practical application to managing how we communicate with others. It is helpful to set boundaries as a protective measure without intending to be prohibitive but prioritising effective communication.

Subjective assessment tools successfully used in the human health care sector include the moral distress thermometer used to assesses levels of acute moral distress a person is experiencing (Wocial & Weaver, 2013). The individual can use this tool to evaluate their own experience of moral distress (American Association of Critical Care Nurses, 2020). This intervention could be applicable for animal care professionals as a rapid measurement of moral distress but also has potential in a team dynamic. This would give the team leaders a snapshot

or a real-time understanding of how the team feels. Further to this, providing an individual subjective measure such as the moral distress thermometer, allows opportunities for the team to bring concerns forward or discuss hard things integrated into the day. For these tools to be successful, it relies on team training ahead of time (in pre-spill training), so there is confidence in their use. Secondly, these tools should be integrated into the briefing and debriefing protocol documents and undertaken as part of the daily routines, during a spill.

Integrating recommendations for the response phase during deployment into daily routines offers several benefits, including improved communication, accurate information dissemination, reduced stigma, and seamless integration into day-to-day operations. These recommendations for the response phase during deployment would need attention and facilitation from training and workshop opportunities provided in preparedness and given space in the briefing and debriefing activities during the day in the facility. The possible benefits of integrating these recommendations as part of the response are that it becomes familiar and part of the daily routine. If difficult things are discussed as part of the normal routines in the facility, managers can direct their team with accurate information, assess their co-workers, reduce the stigma, and integrate into the day-to-day.

6.4.3 Recommendation Three: Establish effective post-engagement strategies for enhancing mental health and emotional wellbeing

One crucial aspect of post-spill activities is the incorporation of debriefing and assessment processes to enhance responders' wellbeing and inform future training. The third recommendation focuses on a shift in the current approach during post-response activities or demobilisation. These activities typically focus on data, finances, and equipment and include many post-spill activities, specifically two core functions. Firstly, to bring the response to a close and assess and prepare for the next event. For the wildlife team, much of the debriefing activities focus on animal care, including processes of what went well and what did not. From the participants' narratives, it seemed that the ability to debrief with their cohort was important

to them. Also, the participants indicated that this was done particularly after experiencing difficult things. Therefore, building on that and integrating it further into the operational documents as part of the spill response demobilisation activities, including the process for responders. Individuals could have the opportunity to assess their own professional quality of life or distress scales post-spill by using freely available tools (ProQOL and K10) and compare them to how they felt pre-spill. This information could be shared with response managers to amend pre-spill training based on demobilisation information.

Using assessment tools such as ProQOL and K10 in disaster response can provide valuable insights into the impact on responder wellbeing, enabling targeted training for future intervention and prevention strategies. Oiled wildlife responders may benefit from training using information gathered from ProQOL and K10 could target future intervention and prevention strategies. To date, much of the research focuses on community recovery after a disaster (Ampuero et al., 2015; Calder et al., 2016), using assessment tools to gauge the impact on wellbeing (Ampureo et al., 2015) or the effect of wellbeing recovery tools have after a disaster (Calder et al., 2016). The use of K10 and ProQOL would assess responders rather than the community.

Implementing a post response interview as part of the debriefing and demobilisation process could yield valuable insights. Information gathered could be utilised to improve preparedness and support the emotional wellbeing of responders involved in oil spill incidents. This recommendation suggests use of an interview based on this research's interview schedule. Formalised semi-structured questions provide an interface with responders allowing debriefing opportunities. This information could be collated to establish what went well for the cohort and what did not to add to knowledge for preparation for any subsequent spill. This would have been beneficial had it occurred for the Rena responders. It would have given time to allow the responders to debrief which may have alleviated some of the emotional angst triggered some

years later. It could assist oiled wildlife response managers in improving some areas and consolidating others from direct and immediate learnings from the responders.

6.4.4 Summary of Recommendations and Future Directions

Developing a suite of preventative measures and interventions would be invaluable for this cohort of oiled wildlife responders, particularly in pre, during and post-spill situations (Table 6.1). To achieve this, pre-planning is necessary to imbed information and integrate it into the training. At the same time, normalising primary preventative measures and interventions in day-to-day response operations may reduce the stigma that responders face when seeking help. Doing so will provide responders with a variety and scope of tools to provide autonomy and choice. To ensure accessibility for various levels of responders, there needs to be dexterity in how it is presented using various structured and unstructured tools.

Ensuring mental health support for oiled wildlife responders is essential, and it requires policy changes, integration of strategies, and enhanced utilisation of animal care professionals' expertise. Integration of strategies and training into operational documents protecting responders from this health and safety risk and empowering the management team to implement actions that will benefit the group as part of the training and preparedness processes in this inherently complex and stressful environment. Oiled wildlife responders require additional support for their mental health across all phases of the spill, not just at the conclusion. The responsibility should lie with the response agency to promote and protect the mental health of their responders. Doing this may require changing how policy is written and practice undertaken for this group. Still, animal care professionals' experience and expertise should not be understated. The use of their skills can be capitalised so oiled wildlife responders can be better equipped to face the complexities of the spill in part by implementing the recommendations presented earlier.

Further work is needed to embed existing tools and to test them in training scenarios with a broader cohort, as it has a wider application than just the wildlife team. It would need to be undertaken before the spill as part of the pre-spill planning phase. The interview schedule used in this research could be further developed for use at the point of demobilisation. Additional questions around resilience and assessment of current applications used in the veterinary profession. This would align with other professions that utilise assessment tools to establish distress or professional quality of life before or at the point of deployment. Both pre- and post-spill assessments would need informed consent from participants before undertaking.

Table 6.1

Summary of Recommendations for Oiled Wildlife Responders

Response Phase	Objective	Delivery	Suggested tools or training	Key points	The importance
1. Pre-disaster Preparedness	Recognise the risk	A Pre-spill training	In house and outsourced skills training with focus on primary preventions and assessments. Low impact debriefing, 4 As, personal reflective debrief, moral distress thermometer and micropractices	Offer a variety of teaching opportunities and workshops Consider them primary prevention May require annual revalidation and practice	Imbed the information so it becomes part of normal training not an add on
		B On Deployment	Individual assessment tools: K10 and ProQOL undertaken at the point of deployment	Make pre assessment part of the induction and deployment process	Gives a base line of the professional quality of life and scale of distress at the point of deployment. Assists managers to assess where to deploy staff
2. During response	Reduce the impacts	During spill	Use of tools that were trained in workshops listed above in pre-spill training Encourage debriefing opportunities as part of the morning and afternoon briefing and debriefing sessions	For this to be effective tools will need to be trained and accessed in the pre phase Primary prevention	Make it day to day practice reducing stigma Becomes a culture of the workplace Acts as prevention rather than intervention Gives choice and autonomy Team trained to a similar level, consistency
3. Post response	Restore the oiled wildlife responders	Post spill	Assess responders' professional quality of life (via ProQOL) and levels of distress (K10) post spill	Redo K10 and ProQOL at demobilisation and compare to baseline. Responders at risk can be steered to professional support if required or self-reflection	Collection of information post spill will be one of the best options to move forward in planning for the next oiled wildlife response event
			Formal professional and informal debriefing opportunities for the core team. Semi structured interview with modified questions from this research with core team	From K10, ProQOL debriefings and semi structured interviews may revel additional training required and target future interventions and prevention strategies	

6.5 Conclusion

This research highlights the importance of protecting the mental health of oiled wildlife responders in the event of a disaster. While experience and personal resources play a role in building resilience, this study shows that relying solely on these factors is insufficient. The findings of this research suggest that embedding the recommendations into operational training plans, and inclusion into responder policy documentation for future spill responses involving wildlife and embedding them into practices undertaken by wildlife responders could help to protect the mental health of trained oiled wildlife responders.

The increasing frequency and complexity of disasters place a growing burden on first responders, emphasising the urgent need to prioritise their mental health and wellbeing. As disasters become more frequent and complex, the toll on first responders will likely increase. Therefore, it is imperative to prioritise responders' mental health, given the critical roles they play. Future direction can steer towards inclusion dimensions of positive mental health. Doing so will ensure that responders have the tools and techniques to manage difficult situations and strategies to manage unexpected or unpredictable events. A natural progression of such an undertaking will benefit the lives of the wildlife and the responders themselves. Addressing this will require responders and response agencies to recognise the risks, reduce the impacts, and restore the individual using an overarching post-spill perspective for opportunities for improvement (Figure 6.1).

This research has shown the possibility of achieving positive mental health outcomes in complex and emotional circumstances. However, the study has also demonstrated the need to integrate consideration of mental health into three key areas: before deployment to establish emotional preparedness, during the response to foster emotional connectedness and camaraderie, and include in post-response demobilisation activities to provide opportunities

for emotional restoration, reflection, and debriefing. Taking a comprehensive approach that considers the entire response, responders and agencies will be better placed to manage complex challenges in the aftermath of an oil spill.

To the best of this researcher's knowledge and experience, this is the first research to investigate prevention and interventions currently applied from the human health sector into the oil spill response context. The complexities of this work environment should not be understated, but there is the possibility to improve emotional preparedness and enhance emotional connectedness. Much of the support for animal care personnel and oil spill responders to date has come from self-help identified tools or relies on the group's resilience and experience. It is apparent from this research that this cohort of responders experienced emotional stress due to accidental death in the facility and witnessed mass mortality caused by human error, and at times, they felt underprepared. For too long, the focus has remained stagnant and left sole responsibility on the individual for their mental health and reliance on their personal resilience. The highest priority should be developing and integrating the research findings and recommendations into policy and practice for oil spill response.

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Appendices

Appendix 1 - Ethics Approval

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Date: 28 July 2021

Dear Bridget White

Re: Ethics Notification - **SOA 21/41 - Mental health of trained oiled wildlife responders: Understanding stress management and coping strategies in animal care professionals during the 2011 Marine Vessel Rena oil spill response**

Thank you for the above application that was considered by the Massey University Human Ethics Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures, or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Professor Craig Johnson
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Appendix 2 - Information Sheet

Mental health of trained oiled wildlife responders: Understanding stress management and coping strategies in animal care professionals during the 2011 MV Rena oil spill response

INFORMATION SHEET

Kia ora, My name is Bridget White, a student in the Master of Health Science program at Massey University currently undertaking a research thesis. I am interested in investigating how oil spill response involving wildlife, during the 2011 Marine Vessel Rena oil spill, has affected the mental health of trained responders and what coping mechanisms were used to deal with stress. I hope to identify strategies and support systems that could be integrated into workplace policy and future planning for oil spill response work. Aside from being a student researcher, I work for Wildbase in the School of Veterinary Science, Massey University, Palmerston North and am a core team member of the National Oiled Wildlife Response Team. The criteria for participating in this research includes:

Deployment to the MV Rena 2011 response as a:

- trained animal care professional with qualifications such as veterinarian, veterinary nurse or technician or are experienced in wildlife rehabilitation AND/OR
- five or more years' experience in wildlife rehabilitation and husbandry AND/OR
- are contracted to or affiliated with an oil spill response agency or part of the National Oiled Wildlife Response Team

I'd like to hear about your experience as a responder during the Rena event in an interview. I expect the interview would take 60-90 minutes, face-to-face or by Zoom™, at a time and place convenient for you. It is important to me that you are aware that:

- ✓ You can always change your mind about participating in the research
- ✓ Participating in the research will not affect your working relationship with response managers or prohibit you from future deployment to oil spills
- ✓ You can ask any questions about the research and decline answering any questions
- ✓ I will record the interview
- ✓ I will keep everything we talk about confidential and will not use your real name
- ✓ I will gift you a $20 supermarket voucher as an appreciation for your participation
- ✓ You will be able to review your interview transcript if you wish
- ✓ You will receive a summary of the research when completed

If you would like to participate in this research, please contact me directly. If you have any questions or require clarification about this research, please do contact myself or my supervisors.

Researcher (Primary)	**Supervisor (Primary)**	**Supervisor**
Bridget White (BHlthSc)	**Dr Chrissy Severinsen**	**Dr Polly Yeung**
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[redacted]	Tel: 06 9516506	Tel: 06 9516514
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This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 21/41. If you have any concerns about the conduct of this research, please contact Dr Negar Partow, Chair, Massey University Human Ethics Committee: Southern A, telephone 04 801 5799 x 63363, email humanethicsoutha@massey.ac.nz

Appendix 3 - Letter of Invitation

Letter of Invitation

Mental health of trained oiled wildlife responders: Understanding stress management and coping strategies in animal care professionals during the 2011 MV Rena oil spill response

Kia ora,

My name is Bridget White, and I am a student undertaking a Master of Health Science, Bioscience at Massey University. As part of my study, I am conducting research to investigate how oil spill response involving wildlife, during the 2011 Marine Vessel Rena oil spill, has affected the mental health of trained responders and what coping mechanisms were used to deal with stress. To undertake this research, I would like to invite six to eight animal care professionals to participate. The criteria for participating in this research includes:

Deployment to the MV Rena 2011 response as a:

- trained animal care professional with qualifications such as veterinarian, veterinary nurse or technician or are experienced in wildlife rehabilitation AND/OR
- five or more years' experience in wildlife rehabilitation and husbandry AND/OR
- are contracted to or affiliated with an oil spill response agency or part of the National Oiled Wildlife Response Team

I would be grateful if you could pass on the attached *Information Sheet* to any of your network or relevant people in your organisation who may fit the above criteria on my behalf who can then choose to contact me directly.

Please contact me if you have any questions regarding this research [redacted] or my supervisors, Dr Chrissy Severinsen, School of Health Sciences c.a.severinsen@massey.ac.nz or Dr Polly Yeung, School of Social Work p.yeung@massey.ac.nz

Nga mihi

Bridget White (BHlthSc)

Appendix 4 - Consent Form

Mental health of trained oiled wildlife responders: Understanding stress management and coping strategies in animal care professionals during the 2011 MV Rena oil spill response

PARTICIPANT CONSENT FORM

I have read and understand the *Information Sheet* for this research.

I have had the details of the study explained to me.

My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I have been given sufficient time to consider whether to participate in this study.

I understand participation is voluntary and that I may withdraw from the study at any time.

I agree to the interview being recorded.

I agree to participate in this study under the conditions set out in the Information Sheet.

Declaration by Participant:

I _____ [print full name], consent to take part in this study.

Signature: _____ Date: _____

Appendix 5 - Interview Schedule

Mental health of trained oiled wildlife responders: Understanding stress management and coping strategies in animal care professionals during the 2011 MV Rena oil spill response

Interview Schedule

I am interested in the experiences you had as a trained oiled wildlife responder or animal care professional.

1. What did it feel like getting notification you were going to be deployed to Rena and heading off to Tauranga?
2. Tell me about the work you did at Rena.
3. Which parts did you enjoy the most?
4. Which parts were the most challenging?

I'd like to ask some questions now about the challenges faced by wildlife responders when managing oiled wildlife. I'm interested in your experiences of spontaneous death, euthanasia, animal care and treatment processes.

5. Tell me about your experience of the death of animals at Rena.
6. How did you cope with this? Were there any strategies you used?

The next question is about working with other people. I'm keen to hear about your stories about communication, teamwork, working with volunteers, and relationships with others.

7. Tell me about your relationships with other responders (volunteers or staff).
8. How did you manage being away from your usual support networks?

I'm also wanting to hear about the challenges faced within the work environment and what this means for the mental health of responders. This is things like management, rostering, induction, health and safety, breaks. I'm particularly interested in the things that workplaces can do to support the mental health of responders.

9. How was mental health and wellbeing supported at Rena? What worked well?
10. What were some strategies or processes that were used during and after stressful situations at Rena?
11. What do you think could be improved in the workplace to support the mental health of responders?
12. Finally, how do your experiences affect your desire to respond to another incident?

Thank you so much for spending time with me today and sharing your experiences, they are valuable and will contribute greatly to this research.

Appendix 6 - Transcript Release Form

Mental health of trained oiled wildlife responders: Understanding stress management and coping strategies in animal care professionals during the 2011 MV Rena oil spill response

AUTHORITY FOR THE RELEASE OF TRANSCRIPTS

I confirm that I have had the opportunity to read and amend the transcript of the interview conducted with me.

I agree that the edited transcript and extracts from this may be used in reports and publications arising from the research.

Signature: ..... **Date:** .....

Full name printed: .....

Appendix 7 - Printable Resource

Little Blue Penguin being washed – Rena 2011

Did participation in the research cause you some discomfort?

Recalling the 2011 Rena Response events may cause you some discomfort or maybe none at all, both are normal responses. Recollection may be in relation to death (spontaneous) or death (euthanasia) of animals during the response alongside the emotions, interpersonal challenges and stress working in emergency response. These can potentially trigger some discomfort. If that is the case, within this handout are some suggested resources. You may also wish to access assistance through your own professional networks and affiliations.

Resource 1: Employee Assistance Program

https://www.eapservices.co.nz/

EAP Services is New Zealand's leading employee assistance program providing support to enhance staff wellbeing, development and performance. EAP services are free to employees whose organizations have commissioned this service.

How do I access EAP Services?
To request a confidential in-person, phone or e-counselling appointment, scan the QR code phone or visit our website or call NZ 0800 327 669

Resource 2: EAP Stress assessment

https://www.eapservices.co.nz/take-our-stress-test/

A free online stress assessment test to compliment the EAP program.

For international participants please refer to your professional networks, the or the following:

Resource 3: The Compassion Fatigue Awareness Project https://www.compassionfatigue.org/

Including the page on self tests (may be useful for all participants)

- Professional Quality of Life (ProQol)
- Self Test
- Life Stress Test

NEED TO TALK?
1737
free call or text any time

Resource 1: Employee Assistance Program (EAP)

EAP services are free to employees whose organizations have commissioned this service

Resource 2: EAP Stress Test

Free online stress test provided by EAP

Resource 3: The Compassion Fatigue Project

Free resources and self tests

Resource 4: 1737, Need to talk?

1737 is New Zealand's mental health & addictions helpline number. This service is provided free of charge.

Resource 4: 1737, need to talk?

(websitehttps://www.1737.org.nz/about/index.html)

1737 is New Zealand's national mental health & addictions helpline number.

The 4-digit number is free to text or call anytime to talk with a trained counsellor.

1737 is staffed by a team of paid counsellors who are available 24 hours a day 7 days a week.

1737 is run as part of the National Telehealth Service. The same trained mental health professionals who currently respond to calls, texts, webchat and emails across the existing National Telehealth Service mental health and addiction helplines (depression, gambling and alcohol drug helplines)

When someone texts or calls 1737 a counsellor will work with the person to develop a care plan.

Brief intervention counselling services (primary counselling services where alternative counselling services are not available).

What can someone call about?
Anyone feeling stressed, anxious, worried, depressed, needing advice on mental health or addictions issues can call or text us.

Little Blue Penguins and staff – Rena 2011

Thank you for your participation