

NO ANIMAL LEFT BEHIND

A critical evaluation of the companion
animal disaster management framework in
New Zealand

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A critical evaluation of the companion animal disaster management framework in New Zealand

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Animal, behaviour, disaster, Edgumbe, emergency, evidence based dynamic doctrine, hoarding, law, livestock, management, New Zealand, pets, policy, politics, rescue, rustling, United Nations, welfare, wicked problems.

Abstract

In 2005, Hurricane Katrina struck the south-eastern United States bringing attention not only to the significant loss of human life, but the plight of hundreds of thousands of animals that were left behind. A key lesson from this disaster was that the needs of pets (companion animals) warranted inclusion into emergency evacuation plans, to reduce the motivation of humans failing to evacuate because they were unable to take their pets. This thesis is the culmination of research into whether those lessons have been effectively implemented and learned, with a special focus on New Zealand emergency management law and public policy. A variety of methods were used, through household surveys, to critically evaluate the companion animal disaster management arrangements in New Zealand: primarily responder interviews, with legal and ethnographic content analysis. Case studies, in particular Hurricane Harvey in Texas (2017), the Edgecumbe flood, New Zealand (2017), and the Nelson fires, New Zealand (2018) provided specific experiences to compare the effectiveness of animal-inclusive disaster arrangements, and to provide an opportunity to identify best practices and recommendations to enhance subsequent responses. Key findings of this thesis include: the New Zealand animal disaster management arrangements remain suboptimal with legal deficiencies requiring attention; there is a lack of integration of technical animal rescue with international disaster rescue arrangements, which may lessen the effectiveness of human and animal rescues; that evacuee behaviour in New Zealand is consistent to that of overseas experiences where guardians of companion animals may place themselves at risk, breaching cordons to rescue their animals left behind following emergency evacuation; and that the lessons identified following animal disaster response are seldom applied and sustained in New Zealand, though this failure to learn is likely to be applicable wider in the emergency management sector and abroad. The thesis acknowledges the author's contribution to the development of animal

disaster management vernacular, including disaster hoarding, disaster rustling, and the delegitimisation of animal rescue. The presented body of works indicate that New Zealand's companion animal disaster management arrangements require further attention and research. By taking a more animal-inclusive approach to emergency management public policy and law, the safety and wellbeing of both animals and humans is likely to be improved.

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Preamble

Foreword

My journey in animal disaster management started when I became a volunteer with the Royal New Zealand Society for the Prevention of Cruelty to Animals (RNZSPCA) in Palmerston North while I was still in high school. Working as a shelter volunteer, primarily with dogs, sparked my interest in becoming a RNZSPCA animal welfare inspector. My other hobby while at high school was participating in the Civil Defence Rescue, an extracurricular programme provided by the municipal emergency management office that taught basic rescue, abseiling and disaster response skills. Early on in my career, I became an RNZSPCA Inspector in Wellington, New Zealand, and following a few calls for animals needing specialist rescue, I formed and trained a volunteer team to create the Wellington SPCA Animal Rescue Unit. This unit was the first technical animal rescue team in the southern hemisphere, and over its 20+ years, it became an icon of industry best practice with hundreds of successful animal rescues that were often deemed impossible or not viable for human-centred emergency services. My interest in emergency management came to the fore when I took up a training management role with the New Zealand Fire Service (now Fire and Emergency New Zealand) and later took a secondment to the former Ministry of Civil Defence & Emergency Management (now National Emergency Management Agency) to work on establishing many facets of the new national Urban Search and Rescue programme. I later completed a Graduate Diploma in Emergency Management, and through my involvement in the United Nations (UN) International Search and Rescue Advisory Group (INSARAG) Asia-Pacific Training Working Group, I was inspired to work in the international disaster management space. I quickly learned that for this opportunity to be realised, it was highly advantageous to attain a master's degree due to the level of competition for such roles. The next step was deciding on a topic for my master's

research, and combining traditional emergency management with animal welfare seemed a logical idea. After watching the documentary *Dark Water Rising*, which followed the experience of spontaneous and formal animal disaster responders during Hurricane Katrina (2005), I also felt compelled to ensure that the lessons from that catastrophe should be learned in New Zealand, as we had nothing comparable in place.

At the time, there was very little research other than the works of Dr. Sebastian Heath and Prof. Leslie Irvine. There certainly was no New Zealand-specific literature around companion animal disaster management, and so my master's report focused on filling that void with a pet owner preparedness survey in Taranaki and Wellington.

Following the completion of my master's, my research efforts focused on using New Zealand-specific case studies to critically evaluate animal disaster management arrangements, with common themes on the human-animal bond, animal disaster rescue, and matters of public policy and law. This research has led to numerous contributions both at the national and international level, including effecting the first municipal animal disaster bylaw in New Zealand, the development of the world's first national disaster identification tag for assistance dogs, the co-founding of New Zealand's first and only animal disaster management charity (Animal Evac New Zealand), and creating the academic and professional credibility to work alongside international scholars to contribute to leading subject matter books (Routledge and the Oxford Research Encyclopaedia) and convening the world's largest animal disaster management conference (GADMC).

Acknowledgements

There are many people who have encouraged and inspired me to complete what has been a lengthy doctoral journey since completing my master's degree in 2010. However, well before making the decision to undertake a doctorate, the foundations and motivation to help animals came from role models I had earlier in life. From starting as a shelter volunteer at the Manawatu RNZSPCA whilst in high school, I was blessed to have Priscilla Shipton and Margaret Gibbons as mentors who believed in me. My grounding in animal welfare with the RNZSPCA later merged with my professional career in disaster management to create an opportunity to become New Zealand's first scholar in animal disaster management. I want to pay tribute to Dr Sebastian Heath, who was the world's pioneer in animal disaster science and paved the way for many others like me to follow in his footsteps and grow the international body of knowledge in this rapidly evolving discipline. Other champions for animal disaster management who I would also like to acknowledge for influencing and inspiring me include Professor Leslie Irvine, Gareth Hughes (former Member of Parliament) and Mr Craig Fugate, Dr Jackson Zee, Dr Dick Green, and Dr Ian Dacre.

I would also like to thank Professor Eric Stern and Professor Andrew Knight, who both provided me the privilege to contribute chapters in their publications for Oxford University Press and Routledge, respectively. Towards the end of this journey, despite COVID-19, I had the honour of working with two other renowned authors in the field to put on the world's largest conference on animal disaster management (GADMC); a special thank you to Professor Mel Taylor and Mr Gerardo Huertas for your friendship and support.

Academically, the journey to this point has been as challenging as it has been rewarding. I am endlessly grateful to Dr Mike King and Mr Marcelo Rodriguez Ferrere and the late Dr Peter Walker from the University of Otago, where I was originally enrolled for my PhD, who always

provided robust feedback and wise counsel and always ensured that my academic goals as a candidate were always put first.

This journey also taught me many things, one of which is that it is better to have many loud voices than just a lone voice. The co-founding of Animal Evac New Zealand with my good friend Theresa Parkin has left a legacy for years to come, with hundreds of newly trained animal disaster response volunteers who collectively spread the philosophy that saving animals saves lives and livelihoods. Thank you, Theresa, for being part of making this charity's vision come true.

Connecting by chance with Dr Carmen Solana and Professor Richard Teeuw from the University of Portsmouth has been a saviour in completing my PhD when life and work changes left me unable to complete my candidature at Otago University. Thanks to both of you for being so welcoming and providing me the advice and support I needed to finally complete my doctoral journey.

A special thank you to my examiners Dr. Sebastian Heath, Dr. Rebecca Husted, and Dr. Leanne Proops who all provided valuable feedback and critical evaluation of my submitted thesis. It was a privilege to be examined by you all.

Finally, from the depth of my heart, I would like to thank my daughter Emmeline and my wife Lisa, who sacrificed family time to provide me the space and opportunity to achieve my long-held dream to complete my doctorate. Thank you to my parents, who instilled in me the value of education. And to Diesel, our eleven year-old German Shepherd, thank you for constantly fooling me with your cuteness, reminding me of the purpose behind this research and why it is important in the lives of so many.

Dedication

This work is dedicated to all those around the world who champion the development of animal-inclusive disaster resilient communities, especially the volunteers of Animal Evac New Zealand.

Abbreviations

AAR	After Action Report/Review
ADA	Americans with Disabilities Act (US)
AIIMS	Australian Interservice Incident Management System
API	Animal Protection Index
CIMS	Coordinated Incident Management System
CRED	Centre for Research on the Epidemiology of Disasters (Belgium)
DOJ	Department of Justice (US)
EBDD	Evidence Based Dynamic Doctrine
ECA	Ethnographic Content Analysis
EM-DAT	Emergency Management Database (by CRED)
FEMA	Federal Emergency Management Agency
GADMC	Global Animal Disaster Management Conference
ICS	Incident Command System
INSARAG	International Search and Rescue Advisory Group
NAAR	National After Action Repository
NEMA	National Emergency Management Agency
NFPA	National Fire Protection Association (US)
NIMS	National Incident Management System (US)
NZ	New Zealand
OIE	Office International des Epizooties (now known as WOAH)
PAW	Planning for Animal Wellness Act
PETS	Pet Evacuation and Transportation Standards Act
RNZSPCA	Royal New Zealand Society for the Prevention of Cruelty to Animals
RSPCA	Royal (New Zealand) Society for the Prevention of Cruelty to Animals
SPCA	Society for the Prevention of Cruelty to Animals
UN	United Nations
US	United States (of America)
USAR	Urban Search and Rescue

WOAH

World Organisation for Animal Health (formerly OIE)

Statement of Originality

This work has not previously been submitted for a degree or diploma at any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Included in this thesis are the publications below. Sole author publications are supplied in full in Appendix 1, and jointly authored publications are supplied in full in Appendix 2.

Glassey, S. (2022). Animal Disaster Management. In A. Knight et al., (Eds.), *Routledge Handbook on Animal Welfare*. Oxfordshire: Routledge. ††

Glassey, S. (2021a). Assistance dogs and disaster: It's an assistance dog. Yeah, right! *Australian Journal of Emergency Management*, 36(3), 7-8.

Glassey, S. (2021b). Do no harm: a challenging conversation about how we prepare and respond to animal disasters. *Australian Journal of Emergency Management*, 36(3), 44-48.

Glassey, S. (2020a) Legal complexities of entry, rescue, seizure and disposal of disaster-affected companion animals in New Zealand, *Animals*, 10(9), 1–12. doi: 10.3390/ani10091583. †

Glassey, S. (2020b). Animal Welfare and Disasters. In E. Stern, (Ed.), *Oxford Encyclopedia of Crisis Analysis*. Oxford: Oxford University Press. ††

Glassey, S. (2019a) *No animal left behind: A report on animal inclusive emergency management law reform*. Wellington: Animal Evac New Zealand. ††

Glasse, S. (2018) Did Harvey learn from Katrina? Initial observations of the response to companion animals during Hurricane Harvey, *Animals*, 8(47), pp. 1–9. doi: 10.3390/ani8040047. †

Glasse, S. (2014b) Shooting them isn't the answer: Why pets matter in disasters. In *Australia & New Zealand Disaster Management Conference: Earth, Fire & Rain* (pp. 47-54). †

Glasse, S., Liebergreen, N., King, M. & Rodrigues Ferrere, M. (2022). *It was one of the worst days of my life: Companion animal owners' experiences of the Edgumbe 2017 flood in Aotearoa New Zealand*. Manuscript submitted for publication.

Glasse, S., Rodrigues Ferrere, M., & King, M. (2021). Lessons lost: A comparative analysis of animal disaster response in New Zealand. *International Journal of Emergency Management*, 16(3), 231-248. †

Glasse, S., & Thompson, E. (2020). Standardised search markings to include animals. *Australian Journal of Emergency Management*, 35(1), 69–74. †

Glasse, S. & Wilson, T. (2011) Animal welfare impact following the 4 September 2010 Canterbury (Darfield) earthquake, *Australasian Journal of Disaster and Trauma Studies*, 2011(2), 49–59. †

NB: All contributions marked † indicate blind or †† open peer reviewed.

A handwritten signature in black ink on a light background. The signature is cursive and appears to read 'S. Glassey'.

Stephen Glassey

14 September 2022

Chapter 1 Introduction

Introduction

In April 2017, the New Zealand community of Edgcumbe was evacuated following the failure of a stop bank flooding the township (Whakatane District Council, 2017). In its wake, over a thousand animals were left behind to fend for themselves, many did not survive (Glassey, 2017a). In the days that followed, the largest companion animal rescue operation in New Zealand history was mounted (Glassey, 2017a).

On a much larger scale, New Orleans suffered a similar fate during Hurricane Katrina in August 2005 with some 100,000 companion animals left behind requiring to be rescued (Anderson & Anderson, 2006; Irvine, 2009). A leading cause of evacuation failure at the time was that companion animals (pets) were not part of evacuation and sheltering arrangements, with 44% of those who chose not to evacuate doing so because they were unable to take their pets (Fritz Institute, 2006). The plight of disaster affected pets left behind, captured the hearts of Americans and public outcry led to reforms including the passage of the Pet Evacuation & Transportation Standards (PETS) Act in 2006 (Green, 2019; Irvine, 2009; LaVoy, 2019). This significantly changed US emergency management policy from not allowing pets to be evacuated during disasters, to ensuring arrangements and capabilities were in place to do so (Brackenridge et. al., 2012; Glassey, 2018). The policy change recognised that the guardians of companion animals were likely to put themselves at risk from failing to evacuate or illegally returning into evacuation zones in order to protect their pets, as they saw their animals as part of the family (Brackenridge et. al., 2012; Glassey, 2018). Indeed, pets are often recognised as important psychosocial coping mechanisms (Hall et. al., 2004; Hunt et. al., 2008) and non-companion animals such as livestock are often important to farmers' livelihoods (Sawyer & Huertas, 2018).

Hurricane Katrina became the genesis of animal disaster management, building on the foundation of research pioneers such as Sebastian Heath, who had conducted studies on the topic prior to Hurricane Katrina, including on the 1997 Yuba County Flood and 1996 Weyauwega Train Derailment (Heath, 1999a). The United States then became central to the advancement of animal disaster management policy, practice and research. However, the lessons from Hurricane Katrina did not appear to permeate through to other countries such as New Zealand (NZ) and Australia. An example of this allowance for history to repeat itself was observed in the 2017 Edgecumbe Floods (NZ), with no plans, no capability, no funding in place for this large scale animal disaster rescue (Glassey, 2018, 2019a). Up until 2010, there had been no research on companion animal disaster management in New Zealand.

Much of the research in relation to animal disaster management has consequently focused on the United States, so this thesis presents a critical evaluation of the state of companion animal disaster management arrangements in New Zealand, with a view to better inform and improve laws, plans, policies and capabilities. The thesis presents a compilation of original research papers identifying the gaps, best practices and drawing recommendations, with a special reference to New Zealand.

Aim

The aim of this thesis is to critically examine the companion animal disaster management framework in New Zealand.

Objectives

In support of the above aim, the thesis has the following objectives:

1. To critically evaluate legal and policy issues specific to New Zealand's animal disaster management framework.

2. To develop evidence based remedies and best practice to address legal and policy gaps specific to New Zealand's animal disaster management framework.
3. To advance the global body of knowledge to promote animal-inclusive community resilience.
4. To identify areas warranting further research.

Chapter 2 Literature Review

This chapter will critically review the literature relating to companion animal emergency management in the international context but also with a focus on research relevant to New Zealand.

2.1 History of animal disaster management

Most national emergency management arrangements are underpinned and shaped by a regulatory framework established by government. Modern day emergency management originated from war-time protection of the civilian population, hence “Civil Defence”. In many countries including the United States, Australia and New Zealand, Civil Defence was demilitarised as a civilian function during the 1960’s cold war era and later expanded to focus on natural hazards such as floods and earthquakes (Ministry of Civil Defence, 1990). In effect, emergency management and related research is still maturing, but has traditionally focused on the impacts on humans. Modern day emergency management generally adopts a comprehensive approach that is more holistic than just responding to disasters. The comprehensive approach applies the phases of mitigation, preparedness, response and recovery (Coppola, 2011). Mitigation involves the assessment and treatment of risk such as the identifying flood plains and using land planning rules to avoid development, or the creation of flood banks (levees). Though such mitigatory measures may reduce the risk, there is often still a residual risk that requires preparing for a potential response. The preparedness phase covers emergency planning, public education, training and exercising of arrangements. Emergency planning is a key part to comprehensive emergency management’s preparedness phase and some early plans were human-centric, even discarding companion animals as a threat to human safety in some cases such as the Hutt City Council (NZ) “Guide for environmental health officers in civil defence emergencies” that stated pets will compete for scarce food and water

resources in a disaster and the number one control option was to “destroy all pets” (Hutt City Council, 1992, p.11).

Though preparedness does not mitigate the risk, it positions the response to be more effective. The response phase occurs when the risk eventuates or is imminent such as the earthquake striking or warning of impending tsunami. The response phase focuses on the preservation of life and property and the immediate needs of the affected community. The response phase may be short lived and is often linked to extraordinary powers exercised by government. Finally, the response phase transitions to the recovery phase, noting that recovery efforts ideally commence simultaneously with the response phase. The recovery phase focuses identifying lessons for future response as well as on the regeneration of the affected community, not necessarily a return to “normal” or the way things were originally as both may not be possible.

Research into animal disaster management was uncommon before the 1990s. The first and most significant epidemiological study concerning pet evacuation failure was conducted by Heath (1995). Since then, animal emergency management has largely focused on companion animals, a term referring to animals that are used for companionship. It is likely that the focus on companion animals over other animal groups such as livestock, captive wildlife or laboratory animals, has come about because of societal expectations arising from publicised disasters such as Hurricane Katrina, and sociozoologic ranking of certain animals over others as more important to protect (Arluke et. al., 2022; Irvine, 2009, p.6) and influenced by a stronger human-animal bond (Irvine, 2009, p.6; Schaffer, 2011).

Since the publication of *Animal management in disasters* by Heath in 1999, there has been growth in animal disaster management research. A number of scholarly books by leading experts such as Irvine (2009), Potts and Gadenne (2014), Sawyer and Huertas (2018), and Green (2019) have significantly added to the body of knowledge. Until Glassey’s report

Recommendations to enhance companion animal emergency management in New Zealand, (2010), there was no published research on companion animal (pet) disaster management specific to New Zealand.

2.1.1 International Influences

In August of 2005, Hurricane Katrina struck the Gulf States of the United States of America. The Category 5 hurricane caused the most damage and deaths in the city of New Orleans due to major failures of its flood protection banks or levees. The US National Hurricane Center estimated that Hurricane Katrina had cost the United States \$125 billion dollars in damage, the same amount of damage that had been caused by Hurricane Harvey in 2017 (National Hurricane Center [NHC], 2018). Hurricane Katrina also led to an estimated 1,836 human deaths across the states of Alabama, Florida, Georgia, Kentucky, Louisiana, and Ohio. At the time, it was the largest disaster in US history, with over a million people from the central Gulf States displaced from their homes (Ladd, Marszalek, & Gill, 2006). However, it was not just people who perished in this disaster. The policy of emergency management at the time was to leave pets behind during evacuations. According to the Fritz Institute, 44% of those who chose to stay behind (in defiance of evacuation orders) did so, in part, because they were not allowed to take their pets with them (Fritz Institute, 2006). As a result, Hurricane Katrina marked the start of modern day animal emergency and disaster management.

Including companion animals in disaster management became such a priority during the year following Hurricane Katrina that vital changes were enacted through federal legislation. In 2006, the Pet Emergency and Transportation Standards (PETS) Act was passed into law as an amendment to the Robert T. Stafford Act, which is the primary US federal emergency management statute (Brackenridge, Zottarelli, Rider, & Carlsen-Landy, 2012; Chretien, 2017; Heath & Linnabary, 2015). The three key elements of the PETS Act are the requirement for

state and local authorities to have an emergency plan that addresses the needs of owners with pets and service animals, the availability of funding for associated emergency preparedness activities, and the rescue and care of animals during emergencies (Edmonds & Cutter, 2008).

Freeman, Leane, and Watt (2013) also identified the initial limitations of the Act, noting that the term “pet” was not defined within the statute. In 2007, the Federal Emergency Management Agency (FEMA) clarified the provisions of the PETS Act. It designated that “pet” would be specific to household pets and domesticated animals (as defined in federal housing regulations), including dogs, cats, rodents, birds, and turtles (FEMA, 2007, p. 122). These animals are normally kept in the home for companionship rather than commercial use. Domesticated animals can be transported in commercial carriers and be accommodated at temporary shelters (Freeman et al., 2013). Freeman et al. (2013) indicates though, that this definition excludes reptiles, insects, fish, and large animals, including horses.

The PETS Act mandated that state and local emergency management must ensure that emergency management plans considered companion and service animals to be eligible for federal disaster funding (Farmer, DeYoung, & Wachtendorf, 2016; Irvine, 2009). However, the effectiveness of the PETS Act has been challenged by scholars. Their studies indicate that the allocated funding has been utilised for other purposes (Heath & Linnabary, 2015), the act lacks measurable standards for animal emergency plans (Chretien, 2017), and it fails to be inclusive of other species that are equally or more vulnerable to hazard events (LaVoy, 2019). Farmer et al. (2016, p. 10) declared that the PETS Act could be viewed as a “policy failure,” given the ongoing refusal of humans to evacuate due to pet ownership and the “vagaries of implementation”.

Some lessons from previous emergencies, especially those from Hurricane Katrina, also led to noticeable improvement through legislative changes, particularly the Texas safety code that

prohibited the tethering of dogs where they are at risk during disasters such as flooding. The significant lack of animal disaster law in many countries including New Zealand in contrast to the US highlighted a research gap warranting further attention.

2.2 Animal Disaster Law

If animal disaster management research is considered to be a relatively new discipline, the subdiscipline of animal disaster law is even more so. The US has produced significant analysis of animal disaster legislation such as US-state-specific laws (Arms, 2010; Chretien, 2017; LaVoy, 2019) and general commentary about the Pet Emergency and Transportation Standards (PETS) Act (Edmonds & Cutter, 2008; Farmer et al., 2016; Heath & Linnabary, 2015; Irvine, 2007; Zottarelli, 2014). However, White's (2012) research is one of the few peer-reviewed articles that critically examines the legal issues in animal disaster law outside of the United States. White's (2012) pioneering article on animal disaster law, focused on Australia, specifically in the context of the 2009 Victoria bushfires and the 2010–2011 Queensland floods. More recently, Best (2020, 2021, 2022) has examined the legal status of animals as property and how this role plays into the vulnerability of animals in disasters. No study had been applied to animal disaster law in New Zealand until Glassey's 2020 study on *legal complexities of entry, rescue, seizure and disposal of disaster-affected companion animals in New Zealand*.

2.2.1 Legal Considerations for Service Dogs

International

Within the general topic of animal disaster management, the specific sub-group of service animals requires special attention, due to their critical role in providing safety and autonomy to users who require support for a range of disabilities (mental, medical, physical). These

service animals are primarily dogs, however though other species are used they are not usually afforded the same regulatory protections. Service dogs are not to be confused with working dogs, such as those used by military, law enforcement and other public safety agencies (i.e. search and rescue, security, drug detection etc). The United States has federal legislation that protects service animals, under the Americans with Disability Act (ADA), which defines a service animal “as a dog that has been individually trained to do work or perform tasks for an individual with a disability. The task(s) performed by the dog must be directly related to the person's disability” (DOJ, 2015).

In the context of disaster management, the United States passed the Pet Emergency and Transportation Standards (PETS) Act, and this created protections for both companion animals and service animals including the requirement that pets and service animals (as defined by the ADA) be able to use public transport and be able to be sheltered during evacuations (DOJ, 2015).

One of the key challenges of ensuring access to public transport and emergency sheltering for service dogs and their guardians is the lack of recognised or protected identification. It is common that only service animals are provided an exemption to access public spaces in daily life. However, the lack of regulatory protected identification for such animals, leads some members of the community to falsely represent their pet dog as a bona-fide service animal in order to gain access to public places. Within Australia, only two jurisdictions (Australian Capital Territory and the Northern Territory) have laws that prohibit the impersonation of service dogs (Glassey, 2022). The lack of protected identification further delegitimises service dogs in disasters where keeping the animal and user together is important for the users safety and wellbeing (Glassey, 2022).

However, the literature regarding service animals in disasters is limited. Notably, many scholars commenting on these issues do not conduct topic-specific empirical studies. Thompson et al. (2014) discuss the public-safety benefits of using animals as a gateway to improving the disaster preparedness of vulnerable communities. A prime example includes the anxiety caused by forced separation from pets at evacuation shelters.

New Zealand

In New Zealand, the term “service dog” is not common as there is a regulatory framework that provides a local definition for such animals, namely “disability assist dog”. Up until 2022, there was a disconnect between the Human Rights Act 1993 and the Dog Control Act 1996, the two key pieces of legislation enshrining the rights of service dogs.

The Dog Control Act provides the definition of a disability assist dog through recognising a number of certifying organisations such as Royal New Zealand Foundation for the Blind, New Zealand Epilepsy Assist Dog Trust and others. The Dog Control Act makes provision for disability assist dogs to access public places and transport, and the Human Rights Act prohibits discrimination on the grounds of being a user of a guide dog (such as those applying for rental accommodation). The Human Rights Act by using the singular definition of “guide dog” failed to acknowledge the wider functions of disability assist dogs. Phibbs, Williamson, Woodbury, and Good (2012) observed a number of issues specific to disability assistance dogs in their wider research concerning the challenges faced by the disabled community during and following the 2010–2011 Canterbury earthquakes. Phibbs et. al. (2012), reported that users of disability assistance dogs were reluctant to access public evacuation centres, as they were unsure whether they would be permitted to have their dog accompany them. They were concerned about the safety of their service dog or that members of the public would act inappropriately with their dog.

In 2022, the Human Rights Act replaced the use of “guide dog” with “disability assist dog” to remedy this inconsistency. Several submissions called for penalties to be introduced for impersonating disability assist dogs (Animal Evac New Zealand, 2021), however such submissions were deemed out of scope of the amendment (Ministry of Justice, 2022).

2.3 Technical Animal Rescue

Emergency management arrangements are commonly based on legislative frameworks, laws and international agreements that often influence response activities including rescue operations. At the international level, disaster rescue methodology is typically developed by the United Nations International Search and Rescue Advisory Group (INSARAG), which focuses on earthquake related urban search and rescue (USAR), though the United States has developed its own domestic methodology, especially around disaster rescue markings placed on structures denoting damage or victims (Glasse & Thompson, 2020). Despite its unilateral disaster marking system being incompatible with other UN member states, the United States is well recognised as a world leader in technical rescue in disasters, in particular following floods, hurricanes and earthquakes. It also is a world leader in technical animal rescue, being the specialists in the rescue of animals from hazardous environments. This is reflected in their national standard on operations and training for technical search and rescue incidents (NFPA 1670:2017) having a chapter for animal rescue.

There is considerable grey literature on flood rescue generally, such as policies, response frameworks, and training manuals. As in many disciplines of technical rescue, the range of scholarly articles on flood rescue is limited. Katirai and Simpson (2008) studied large-scale rooftop evacuations during Hurricane Katrina, and they concluded that the most significant issue was the lack of interoperability of communication systems. The study notes that the Coast Guard helicopter aircrew, on average, rescued 71 people and additional pets (numbers not

specified) per crew during every 7-hour shift. In total, the US Coast Guard rescued 12,533 people (Katirai & Simpson, 2008). An example of scholarly flood related literature specific to animals was by Soric, Belanger, and Wittnich (2008) who offer a method for the decontamination of animals affected by floodwater in order to improve the health and safety of both animals and workers involved in their care.

Many wide-area flood and earthquake events, such as large-scale hurricane-related flooding in the United States, have required operational elements of urban search and rescue. Urban search and rescue is generally understood to mean the safe and expeditious location and retrieval of trapped victims following a structural collapse or disaster. Prior to Glassey's (2018; 2020) works there had been limited research that studied the technical rescue of animals as a USAR function, and there has only been a few specific studies on USAR generally, despite the significant amount of funding that goes into these human-focused activities. Arguably, the return on investment is poor in these situations (Rom & Kelman, 2020). International deployments function more as political gestures of solidarity than as practical life-saving activities with money spent on such deployments having the potential to save more lives if it were used for hazard mitigation or building local response capacity (Okita et. al, 2022). The large number of international USAR teams deployed to New Zealand following the 2011 Christchurch earthquake led to the saving of only one human life: this person was found by the quick-to-arrive Australian team, who were alerted to the existence of a trapped victim by the media (Bouda, 2021). In the weeks that followed, New Zealand deployed its USAR team in Japan as a response to the Great Eastern Japan earthquake and tsunami, although the team carried out no rescues of living persons.

Research into USAR, particularly in an international context, is often associated with the UN International Search and Rescue Group (INSARAG). INSARAG sets standards for accredited

teams and member countries. However, INSARAG-related research is scarce in many ways. Morris (2007) conducted the first empirical study encompassing the work and guidelines associated with INSARAG. Morris (2007, p. 50) found that “there is a profound lack of research available specifically on international USAR aid provision and use,” and that “the fire and emergency service world do not commonly make use of academic research principles such as peer review.” Although there is much related research available, such as on incident management and crisis decision making, Morris’s (2007) argument is valid in the sense that research that concentrates purely on USAR was next to non-existent at that time. Morris’s (2007) study identified the importance of timing and understanding in USAR preparedness activities. Since this study, there have been a small number of publications providing direct observations on USAR operations. These include empirical comparative analyses of INSARAG building search markings (Glasse, 2013; 2014a), light rescue team experiences (Henry, 2011), advanced rescue techniques used in a building collapse in Nairobi by an Israeli specialist rescue team (Rokach et al., 2009), INSARAG classification experience in Japan (Okita, Sugita & Katsube et al., 2018), and a ground-breaking study by Bartolucci, Walter and Redmond (2019) that reports that international response team deployments are largely ineffective from a lifesaving or cost perspective. These findings support Glasse’s (2013, p.31) suggestion that the “cost of deployment could save more lives if allocated pre-event to disaster risk reduction and mitigation programs”. In the context of rescuing animals (not animals such as search dogs, rescuing humans), the limited amount of research on the relationship between human and animal victim rescue in a USAR response warrants further attention.

2.4 Learning Lessons from Emergencies

Following response and recovery from any disaster, such as Hurricane Katrina or the Edgecumbe Flood, it is important to reflect on these activities and learn from them to reduce

future risk and vulnerabilities and improve subsequent preparedness, response and recovery activities.

“Lessons learned” is a term that is often used in emergency management, referring to a process of identifying areas of improvement to assist in mitigating these deficiencies in future responses. The term, however, is usually misapplied, with common failings recurring from one emergency to the next despite identification of such lessons (Donahue & Tuohy, 2006; Glassey, 2011; Savoia, Agboola, & Biddinger, 2012). Donahue and Tuohy (2006) identified common repeated failures across the themes of uncoordinated leadership, failed communications, weak planning, resource constraints, and poor public relations. The lack of mandatory and standardised after-action reports, central repository after-action reports, centralised knowledge database, and real-time incident research advice are just a few reasons why the same mistakes continue to be made in emergency management (Donahue & Tuohy, 2006; Glassey, 2011; Savoia et. al., 2012; Jackson, 2016; and Cole et. al., 2018). The importance of learning lessons in the context of animal disaster management can be summarised by the World Organisation for Animal Health’s Guidelines, which include the following point: “Lesson Learnt: to enable post-incident evaluation, it is important that issues are recorded at all the stages of the disaster. Enabling a systematic recording of incidents will maximise the benefits of lessons learnt” (OIE, 2016, p.8). Despite the recommendations of these guidelines, it is not clear whether such lesson management systems are consistently being used globally (or locally) in the animal disaster response field.

However, in New Zealand, while numerous animal-related response issues occurred during the 2017 Edgecumbe flood and were identified within months of the event, the same mistakes were repeated in the 2019 Nelson fires (Glassey, King, & Rodrigues Ferrere, 2020). Research by Glassey, King, & Rodrigues Ferrere (2020) became the first comparative study of lessons

management in New Zealand and is believed to be also the first of its kind in animal disaster management globally. Its findings may well reach into mainstream disaster management, challenging the notion that the sector continually learns from previous emergencies, which is of significant global relevance.

2.5 Summary

Over the past 11 years, the body of knowledge in animal disaster management has gained not only attention but legitimacy. During this period, the literature was primarily generated within the US and Australia. With respect to the development of specific legislation and plans based on these international lessons, New Zealand's progress appears sub-optimal (Glassey, King, & Rodrigues Ferrere (2020)). The theme of Glassey's research was to critically evaluate companion animal disaster management arrangements in New Zealand and raise awareness of the benefits of promoting animal-inclusive resilient communities. In identifying core themes across Glassey's research, logical connections are drawn using a comprehensive emergency management lens which is based on the four phases of mitigation (reduction), preparedness (readiness), response, and recovery (figure 1). From mitigating the disaster risks to humans and animals in the mitigation phase, to preparing to respond to the residual risk left from the mitigatory phase through training and emergency planning, to responding to the effects of a disaster in an animal-inclusive fashion (such as performing technical animal rescue), moving then to the recovery phase where lessons can be identified to improve future responses including newly identified mitigation activities such as changes to law, policy and plans.

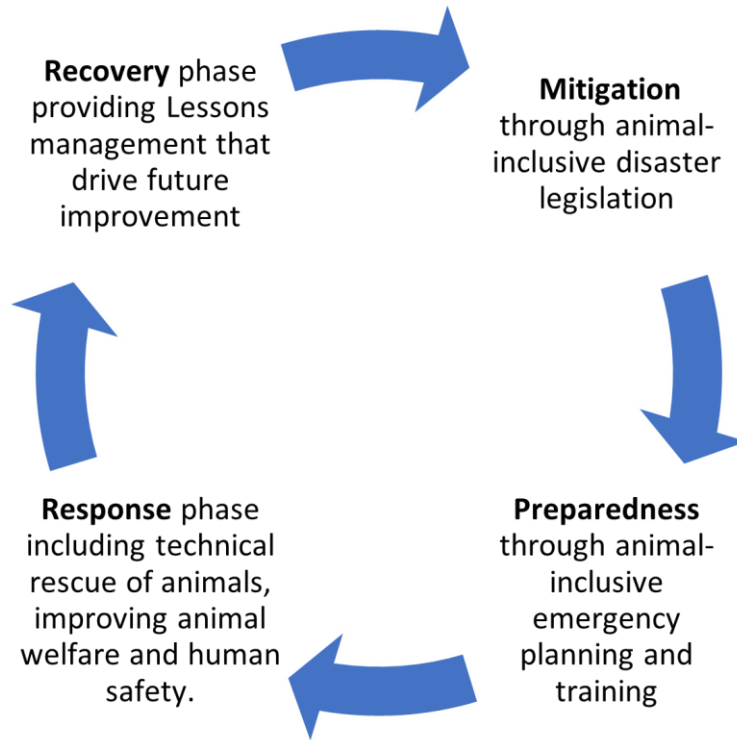


Figure 1: Key themes of Glassey's research constructed through a comprehensive emergency management model lens.

Chapter 3 Methodology

Each of the publications presented in this thesis had its own aims and objectives to address various research questions, and consequently, different methods were used.

Table 1 illustrates how the range of methods used across Glassey’s publications are linked to the research objectives outlined in chapter 1.

	Objective 1: Evaluate legal & policy issues (NZ)	Objective 2: Develop best practices (NZ)	Objective 3: Global body of knowledge contribution	Objective 4: Identify areas warranting further research
3.1 Mixed Method	Glassey et. al., (2022)	Glassey et. al., (2022)	Glassey et. al., (2022)	Glassey et. al., (2022)
3.2 Ethnographic Content Analysis	Glassey et. al. (2021)	Glassey et. al. (2021)	Glassey et. al. (2021)	Glassey et. al. (2021)
3.3 Semi- structured interviews			Glassey (2018)	Glassey (2018)
3.4 Legal analysis	Glassey (2020a)	Glassey (2020a)		Glassey (2020a)
3.5 Reflexive approach	Glassey (2014b, 2021a, 2022, 2020b), Glassey & Thompson (2020), Glassey & Wilson (2011).	Glassey (2014b, 2021a, 2022, 2020b), Glassey & Thompson (2020), Glassey & Wilson (2011).	Glassey (2014b, 2021a, 2022, 2020b), Glassey & Thompson (2020), Glassey & Wilson (2011).	Glassey (2014b, 2021a, 2022, 2020b), Glassey & Thompson (2020), Glassey & Wilson (2011).

Table 1: Matrix of thesis objectives against research methods used.

3.1 Mixed Method - Online Survey

For the study conducted by Glassey et. al., (2022) an online household survey design was modelled on a study by Heath et al. (2000) that investigated the Yuba County 1997 and Weyauwega 1996 emergencies in the USA. The survey used by Glassey et. al. (2022) was modified and reduced in scope from that developed by Heath et al. (1999) to suit the case study, the 2017 Edgecumbe flood in New Zealand. Inclusion criteria were set similar to that of Heath's study, being at a household level domiciled within the evacuation area at the time. Cards inviting households in the Edgecumbe township to participate in the survey were hand delivered. This was supplemented with online posts across local Facebook groups and posters on local notice boards. The notices directed households to an online survey using the Qualtrics platform. The online survey included an introduction to the study and a demographics section. The line of questioning explored decision making around human evacuation and the evacuation of animals, the availability of emergency resources, preparedness and experiences of the response and subsequent recovery. The survey used a mixed-methods approach that allowed for both statistical and personal experiences to be reported; however, this approach is generally considered to be more complex to undertake and requires more time and expertise than a single method would.

3.2 Ethnographic Content Analysis

Glassey et. al. (2021) used an ethnographic content analysis (ECA) to establish what lessons were identified and learned comparatively between two incidents using respective after-action reports. The benefit of using the after-action reports as the data source was that it enabled quantitative and qualitative evaluation with minimal margin for misinterpretation. ECA is used to document and understand the communication of meaning and consists of a reflexive movement between concept development, sampling, data collection, coding and analysis

(Altheide, 1987; Bryman, 2012). From this, lessons were aggregated by similarity, allowing themes to be identified using a modified reflexive thematic analysis approach (Braun and Clarke, 2013). The limitations of this method were noted, including observations and other sources of information that were not in scope, and therefore, the results may not accurately identify unreported issues.

3.3 Semi-Structured Interviews

Glassey's (2018) field research trip to Texas in 2017 involved semi-structured interviews with key personnel involved in Hurricane Harvey, particularly those responsible for responding to companion animal rescue and care. The flexible nature of this qualitative approach allowed it to address several key research questions, namely: (1) Had the PETS Act of 2006 influenced animal emergency management practices? (2) What preparatory activities had been undertaken to protect animals prior to Hurricane Harvey? (3) What were the challenges and novel complications observed by those leading the animal emergency response to Hurricane Harvey? (4) What were the key lessons from Hurricane Harvey from an animal emergency management perspective? The semi-structured nature of the interviews allowed other areas to be discussed and documented in the interview notes to provide clarity on issues raised by the respondents. The flexibility of the semi-structured interview allowed for the empirical discovery of *disaster hoarding*, which may not have been reported using a structured interview. Along with flexibility, the strength of face-to-face interviews includes being able to provide "rich and detailed data" about the respondent's experiences and perspectives, making it "ideal for sensitive issues" such as those raised with disaster hoarding, disaster rustling and the use of armed military without community consent (Braun and Clarke, 2013, p. 80). In addition to being resource and time intensive, this method is limited in that the questions being

dynamically explored may be influenced by the interviewer's own bias, and the sample size may be insufficient to draw conclusions and comparisons (Braun and Clarke, 2013).

3.4 Legal Analysis

A legal analysis of laws pertaining to animal disaster management in New Zealand, specifically those relating to entry (onto property), rescue, seizure, and disposal of disaster-affected companions was undertaken comparatively across four applicable and current statutes as part of Glassey's (2020a) publication. Using the comparative legal research method involved stepping through the phases of an animal disaster response operation and checking each action against the statutes to determine whether there were applicable laws, a conflict in law, or absence of law. The method included legal peer review by law academics, given that the author did not hold a law degree but had studied animal welfare law as part of the Unitec Institute of Technology Certificate in Animal Welfare Investigations. Similarly, Glassey (2019a) built upon the previous legal analysis, which also guided the discussion around the challenges of disability assistance dogs in Australia and New Zealand (Glassey, 2021a). Both publications were again subject to review by legal professionals and academics.

3.5 Reflexive Approach

The remaining papers (Glassey, 2014b, 2021a, 2022, 2020b; Glassey & Thompson, 2020; Glassey & Wilson, 2011) used a reflexive approach to review themes in the literature and develop evidence-based recommendations, including conceptual frameworks. Reflexivity is a research method that involves the researcher reflecting on their own biases, assumptions, and preconceptions in order to better understand the research process and the results of the research (Woodley and Smith, 2020). This method is used to ensure that the researcher is aware of their own potential biases and how they may influence the research process and results. Reflexivity is an important part of the research process as it allows the researcher to be aware of their own

potential biases and how they may influence the research process and results (Woodley & Smith).

Reflexivity can be used in a variety of ways in the research process. For example, the researcher can reflect on their own assumptions and preconceptions about the research topic and how these may influence the research process and results. Additionally, the researcher can reflect on their own experiences and how these may influence the research process and results. Finally, the researcher can reflect on the research process itself and how their own biases may influence the research process and results (Woodley & Smith).

Using a variety of methods across the publications provides for a robust quantitative and qualitative approach to this dissertation overall.

Chapter 4 Results & Discussion

In respect to companion animal disaster management literature, there was a significant lack of research that was specific to New Zealand, prior to Glassey's (2010b) research report *Recommendations to enhance companion animal emergency management in New Zealand* provided the starting point for future work as it identified gaps around matters requiring further research, particularly matters of law. Prior to this animal disaster research in New Zealand appeared to only address impacts from volcanic eruptions on livestock, such as Leonard et al. (2005). Broader research into companion animal disaster management in New Zealand includes country specific reports into emergencies (Glassey, 2010a, 2010b) as well as comparison with other countries. Glassey and Wilson's (2011) publication investigated the impacts of the 2010 Darfield earthquake (New Zealand) and the 2008 Chaiten Eruption (Chile) and published results from Glassey's (2010a) study related to pet owner preparedness. Key findings suggested that New Zealand had inadequate laws, strategy, guidelines, plans, arrangements, capacities and resources for managing and protecting animals in disasters, as well as challenges for the users of disability assistance (service) dogs.

Glassey's (2010b) report discusses a range of pragmatic animal disaster law issues, including criminal liability, microchipping, multiple-dog-owner bylaws, requisitioning, evacuation, seizure, and destruction. This earlier work, though, did not address legal matters of disposal, emergency codes of welfare, impersonation of disability assistance dogs, the power to enter and seize/rescue, public transportation, and several other matters. In 2019, Glassey addressed these deficiencies in a report submitted to the New Zealand Parliament (Glassey, 2019) which was supported by former US FEMA Administrator Craig Fugate, who noted the benefits to public safety of protecting animals in disasters (Fugate, 2014; 2019). Following his 2019 report, Glassey published 'Legal complexities of entry, rescue, seizure and disposal of disaster-

affected companion animals in New Zealand' in 2020. This not only became the first scholarly article on animal disaster law in New Zealand but also identified a legal flaw in the legislation, specifically the failure to provide a disposal clause for seized animals under the Civil Defence Emergency Management Act 2002, which put such animals in a state of legal limbo (Glassey, 2020).

The most cited publication in this thesis focused on the animal welfare impact following the September 2010 Canterbury earthquake (Glassey & Wilson, 2011) in which the lack of common identification for bona fide service animals was observed, which led to the development of a national identification tag for all types of disability assistance dogs in New Zealand (Glassey, 2014b). The tag was developed as part of a multi-agency working group under the National Welfare Coordination Group, chaired by Glassey in his role as General Manager of Emergency Management for the Ministry of Social Development at the time. The tag was launched by the Minister of Civil Defence in December 2013. The benefits of this new tag were shared internationally at the Australia and New Zealand Disaster Management Conference in 2014 (Glassey, 2014b) and through the Australian Journal of Emergency Management in 2021 (Glassey, 2021a). A legal issue remains in terms of protecting the status of disability assist dogs in New Zealand, particularly during disasters, as some dogs are falsely identified as service dogs by their owners (Glassey, 2019a; 2022). Since its introduction, the tag system has not been evaluated, and there is anecdotal evidence to suggest that a lack of awareness of it is increasing. This is an important area that warrants further research due to the vulnerability of both the animals and their owners.

Glassey's (2018) field study findings come as a result of carrying out a number of semi-structured interviews with key response personnel in and around Houston, Forest Park City and Wharton City, Texas in the months following Hurricane Harvey. Its novel contributions include

coining the terms *disaster rustling* and *disaster hoarding* in the academic vernacular and the surprising discovery that the existence of the PETS Act was not well known by stakeholders, even though it had created cultural change in the US in regard to animal welfare in disasters.

The research gap pertaining to animal disaster management law in New Zealand was primarily bridged by Glassey's (2019a), a report presented to the New Zealand Parliament in 2019 on animal disaster management law reform, and an analysis of response related animal disaster law (Glassey, 2020a) which was published in *Animals*. The report received national media attention and was supported by Member of Parliament Gareth Hughes (who wrote the report's foreword). Former US Federal Emergency Management Agency Administrator Craig Fugate reinforced the need for such legislative reform as the keynote speaker at the launch of the report. The primary statute for disaster management in New Zealand is the Civil Defence Emergency Management Act of 2002, which is currently under review. It is hoped that these publications will inform improvements to the current animal disaster management arrangements. Significantly, the report was used to lobby for change at the municipal level. In 2019, following a submission to the Kapiti Coast District Council Dog Control Bylaws, the Council passed the first animal disaster management bylaw (cl. 7.1(e))¹ in New Zealand (Appendix 3), mirroring the provision of the Texas public safety code that prohibited the tethering of dogs during floods and other emergencies in which they would be placed at risk (Appendix 3). The study also uncovered a significant omission in the current legislation, which had not been identified and published to date, that the statute created provisions for the seizure of things but failed to provide a legal procedure for their disposal. Thus, animals seized in order to rescue them had no right of disposal, including transfer of ownership of unclaimed displaced

¹ Cl. 7.1(e), Kapiti Coast District Council, Dog Control Bylaw 2019. Available from <https://www.kapiticoast.govt.nz/media/20smk0is/dog-control-bylaw-april-2019.pdf>

animals. This remains a major legal impediment to rehoming disaster-affected animals that are not claimed by their owners or guardians. This study also became one of very few studies that provided published legal analysis of emergency management law in New Zealand.

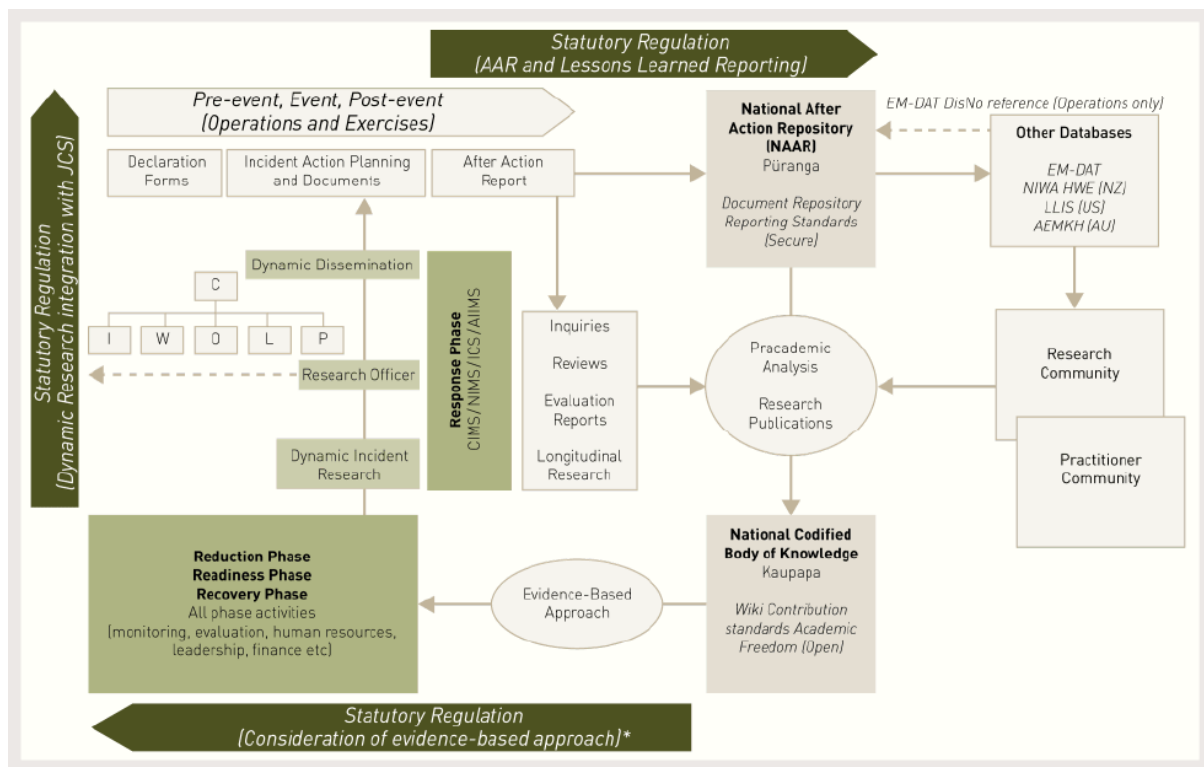
By invitation, Glassey (2020b) published in the *Oxford Research Encyclopedia on Crisis Analysis* (edited by E. Stern) and in *Routledge Handbook on Animal Welfare* (edited by A. Knight) (Glassey, 2022). Glassey (2020b) provides a novel contribution in the theoretical framing of animal disaster management within a *wicked problem* public policy construct. A *wicked problem* is “a social or cultural problem that's difficult or impossible to solve because of its complex and interconnected nature” (Interaction Design Foundation, n.d.). At the time of submission (2020), Glassey was unaware of an article that introduced the construct of *wicked problems* to the animal welfare context by Fernandes et. al. (2019). This was unfortunate, as it would have provided opportunities to strengthen the publication. However, despite this limitation, it would appear Glassey’s application of *wicked problems* to the context of animal disaster management is novel and contributes to the body of knowledge in this area by synthesising the construct of *wicked problems* within an animal disaster management context.

Glassey (2018) drew similar conclusions following a field study in Texas in December 2017 in the wake of Hurricane Harvey in August 2017. Semi-structured interviews revealed that some key personnel involved in animal emergency management were unaware of the PETS Act’s existence. Others who were aware of the Act described it as “no carrot and no stick” (Glassey, 2018, p.3), which is consistent with Decker, Lord, Walker, and Wittum’s (2010) pre-Harvey findings. Glassey’s (2018) study published the first empirical reporting of *disaster rustling* and *disaster hoarding*, thus adding to the animal disaster management vernacular.

Animal rescue has become a growing element in disaster rescue in the early 21st century, yet national and international protocols, such as disaster search marking systems, often omit this evolving element of response. During the Edgecumbe 2017 flood event in New Zealand, the public were incorrectly advised by civil defence authorities that buildings marked with the letter “C” in a diamond had been condemned, when in fact the marking—as per the INSARAG guidelines—indicated the structure was “clear” of persons, but also of animals (Glassey, 2017a). The reality of modern society is that animals will need to be searched for and rescued by emergency services during disasters. The lack of integrated human and animal search and rescue creates numerous issues, including search duplication, false flags created by trapped animals (Glassey & Thompson, 2020) and owners returning without permission to rescue their animals (Green, 2019; Heath, 1999, Irvine, 2009; Sawyer & Huertas, 2018). The lack of animal search markings in the INSARAG methodology was raised as a concern (Glassey, 2010a; Glassey & Thompson, 2020; Okita et.al., 2022) and issues associated with this occurred in events such as the 2017 Edgecumbe floods. The current INSARAG guidelines do not consider animal rescue, leaving technical animal rescue organisations with no recognised alternative building-marking system, meaning they often operate in an uncoordinated fashion (Glassey & Thompson, 2020). Glassey (in Glassey & Thompson, 2020) then draws on direct experience of seeing the challenges of search and rescue markings used to denote structures that have been searched following disaster, specifically the gap in evidence to support an animal-inclusive approach for disaster rescue. In collaboration with Eric Thompson, a well-regarded animal disaster response expert in the US, a new system of search marking symbols was developed and adopted by international organisations including the International Technical Rescue Association (Glassey & Thompson, 2020). Like the existing FEMA search marking system, it has not been agreed to by INSARAG, and further work is needed to champion this marking system and legitimise animal disaster response teams, especially given their positive impact on

human safety. Research on INSARAG and related international urban search and rescue has only recently gained the attention of scholars, so although it is specific to animal rescue, this contribution is of note given societal changes like efforts to better protect animals in disasters and the increasing belief that companion animals are members of the human family.

Building on an opinion piece on “lessons lost” published in the *Australian Journal of Emergency Management* (2015), the hypothesis that the emergency management sector fails to learn from lessons identified was tested by Glassey et. al. (2022). This was a globally significant study, as it was one of the few (if not the first), to undertake an analysis of lessons identified from a disaster event and evaluate whether such lessons were actually learned based on a subsequent response. This empirical study found that concerns over a failure to learn and implement changes was much worse than envisaged, with just 7% of relevant lessons identified being applied in a subsequent event. The study has global significance, not just for animal disaster management, but also for the wider emergency management sector. This study, along with the Evidence-Based Dynamic Doctrine model (Figure 2) developed by Glassey, was included in the Scottish Government *review on lessons and debrief literature* and was “positively received” (Dr. Kevin Pollock, 18 June 2022, personal communication). It is hoped that these publications will influence emergency management policy in Scotland.



Legend: CIWOLP response phase positions in the diagram indicate: Control, Intelligence, Welfare, Operations, Logistics and Planning.

Figure 2: Evidence-Based Dynamic Doctrine (Glasse, 2014) model that espouses a regulatory and evidence based approach to lessons management, providing real-time incident monitoring and correction.

From observations made by Glassey (2021b), the emerging issue of *de-legitimation of animal rescue* is discussed. It is the first commentary that applies the “do no harm” principle, common within the humanitarian aid vernacular, to animal disaster management. This work was originally presented at the Global Animal Disaster Management Conference (GADMC®)² in 2021 and then published in the *Australian Journal of Emergency Management*. Experts from

² Video presentation available at <https://youtu.be/hHD968UZQuk>

around the world who attended the conference also supported the notion and acknowledged that the issue requires further attention.

Finally, the study undertaken by Glassey et al. (2022) is the most substantial of the submitted publications. It is based on a study by Heath et al. (1999), which is well known as the first significant study of its kind. Glassey et al. (2022) replicated this study nearly 23 years later, and the findings were consistent, rejecting the hypothesis that the animal disaster management experiences of the US were not relevant to the New Zealand context. With over 35% of households in the Edgecumbe township participating in the study, there is high confidence in the data and conclusions drawn. The study was also New Zealand's first empirical study on companion animal disaster response in the context of flooding. The significance of the household survey was that 33% of households had reported attempting to illegally re-enter the cordoned township (with many admitting success) and that the primary reason for evacuees to attempt such illegal action was to care for their animals. This finding supports the narrative that emergency managers should make animal rescue following evacuation a priority in order to not only address animal welfare concerns but to mitigate the illegal and often unsafe re-entry of evacuees.

The findings also highlight deficiencies in the emergency management system in regard to animal welfare, which is consistent with a farming-focused study of the same event by Paulik et al. (2021), which also reported community issues around roadblocks preventing access for animal welfare purposes. Another New Zealand farming-focused study on a previous flood event by Smith et al. (2011, p.549) also found criticisms of the government response bureaucracy such as, "When government officials came, they simply got in the way of the effort. Their systems of process defy all kinds of common sense which farmers have about their land and stock".

There is some evidence that the New Zealand emergency management system is suboptimal and warrants further attention with respect to animal welfare.

Chapter 5 Recommendations & Conclusion

Recommendations

From across the suite of publications submitted and discussion within this thesis, the following recommendations are made:

New Zealand specific recommendations:

1. That companion animal emergency management is led by traditionally human-focused agencies, such as the National Emergency Management Agency (NEMA) at the national level and Civil Defence Emergency Management Groups at the regional level.
2. The Ministry for Primary Industries should be responsible for the coordination of non-companion-animal emergency management, such as for livestock, factory farms, zoos, aquariums, and research facilities.
3. The lack of national and regional animal-specific emergency management plans across New Zealand should be resolved, and such plans should be incorporated by reference under Section 40 of the Civil Defence Emergency Management Act 2002 to afford them legal status and make them enforceable.
4. The Civil Defence Emergency Management Act 2002 should be expanded to ensure that the range of emergency powers can also be used for the protection of animals, including microchipping of animals as an emergency power. Inconsistencies within the act between “life” and “human life” should be resolved.
5. The National Civil Defence Emergency Management Plan Order mandates the rescue and decontamination of companion animals being a responsibility of Fire & Emergency New Zealand to ensure that human and animal rescue operations are integrated, noting animal organisations may provide a supporting role. These

functions would be coordinated by Civil Defence Emergency Management Groups at a high level, with control of such activities resting with Fire & Emergency New Zealand. Civil Defence Emergency Management Groups in partnership with local government animal control would coordinate companion animal welfare with supporting organisations outside the rescue or evacuation zone (i.e. once companion animals are removed to safety).

6. Animal related emergency response (under the cl. 162, National Civil Defence Emergency Management Plan Order) costs for animal related response and recovery functions should be made eligible for reimbursement by central government, rather than having the good will of animal charities be exploited. This would allow the cost of animal response and recovery activities coordinated by Civil Defence Emergency Management Groups, Fire & Emergency New Zealand and the Ministry for Primary Industries to be covered outside of business as usual funding.
7. An offence be created under the Dog Control Act 1996 for placing service dog identification on dogs that are not certified as disability assistance dogs, to make personation of disability assistance dogs illegal.
8. That commercial operators of animal housing facilities should be required to have documented and tested emergency management plans in place under the Animal Welfare Act 1999, to a prescribed standard.
9. Local authorities need to ensure that they have provisions in their bylaws to allow for emergency variations to dog control ordinances, such as designating emergency dog exercise areas.
10. The legal processes for entry onto property to carry out rescue of animals, including seizure, notification to owners and disposal, including rehoming, must be amended

because the current laws fail to provide for rehoming animals seized under the Civil Defence Emergency Management Act 2002, as disposal provisions were omitted.

11. The National Animal Welfare Advisory Committee established under the Animal Welfare Act 1999, should expand their prescribed expertise to include animal disaster management given the demands of climate change.
12. To ensure that the family unit can remain together, those seeking rental accommodation in the statutory recovery transition period following a disaster must not be discriminated against for owning companion animals. This provision could be amended in the Residential Tenancies Act 1986.
13. Civil defence should no longer have the autonomous power to destroy animals in a disaster, and there should be new requirements under the Civil Defence Emergency Management Act 2002 to consult with an Inspector under the Animal Welfare Act 1999 or Registered Veterinarian should this option be pursued.
14. That the Civil Defence Emergency Management Act 2002 provides a specific power that companion animals be permitted on public transport to aid their evacuation during emergencies.
15. Animal population data should be developed and maintained for emergency planning purposes.

International recommendations

16. INSARAG should give strong consideration to the development of an animal disaster response team classification (i.e., light animal) and adopt or develop a search marking system that accommodates animal search operations.
17. As there remains no international tool to compare the effectiveness of animal disaster management frameworks across countries, there would be merit in exploring either the

modification of the Animal Protection Index³ (API) to include such criteria or the development of an animal disaster management ranking tool. This would improve the accountability of governments to meet societal and moral expectations. For example, New Zealand under the API currently is graded C on a scale of A to G, with A being the best, putting it on par with India, Spain, Malaysia and Mexico.

18. A model animal disaster management act should be developed to support the above indices or ranking system and to provide a benchmark for the adoption of future legislation by other countries.

Future

Animal disaster management as a discipline continues to grow in depth and legitimacy. As research gaps continue to be filled, new issues emerge, creating new voids to be explored. Such examples of emerging issues include the impact of pet loss and separation during complex emergencies, such as the current Russian invasion of Ukraine, which have demonstrated that even in times of war, animals' matter to those affected by conflict (ABC News, 2022; The Independent, 2022). The potential impacts of nuclear war on companion animals in particular, including decontamination and mass sheltering, may well become key barriers for human evacuation planning. People have demonstrated consistently that they will ignore public safety directives to care for their animals, even in the face of war (Sawyer & Huertas, 2018) and radiological incidents (Kajiwara, 2020) as seen in the Ukraine and Japan respectively.

The conditions of the Anthropocene also create new and emerging challenges for animal disaster management, with climate change creating amplified and more frequent hazard events and the human system becoming more frequently exposed to such hazards due to population

³ <https://api.worldanimalprotection.org/>

growth and urbanisation. As intensification of farming increases, so does the vulnerability of exploited species whose survival is dependent on humans. Catastrophic bushfires and heat waves have an impact on animals and their welfare, as well as on the humans that are bonded to them psychologically, morally, or economically.

Within the legal context, a few countries are championing change to better protect animals. Of recent note, Spain has passed legislation that recognises pets as legal family members (Pons, 2022). The implications of this within a disaster management context remain to be researched. Even though the US has been a proactive leader to protect companion animals in disasters under federal law, two bills have been prepared to go beyond the requirements laid out in the PETS Act. They include the Planning for Animal Wellness (PAW) Act that is currently before the Senate (May 2022), which would “require the Administrator of the Federal Emergency Management Agency to establish a working group relating to best practices and Federal guidance for animals in emergencies and disasters, and for other purposes”. The mainstreaming of animals in emergencies, diverting responsibility from traditional animal health agencies to instead have FEMA lead this work, reflects the recommendations in this thesis that animals and people are intrinsically linked and that emergency planning pertaining to animals should not be a separate function from the work of a government disaster management agency.

Conclusion

This thesis aimed to address knowledge gaps and identify areas for further research in a bid to not only to improve the welfare of animals affected by emergencies but also humans as part of a more holistic approach to public safety in New Zealand.

The main contributions of this thesis against its objectives include:

Objective 1: To critically evaluate legal and policy issues specific to New Zealand's animal disaster management framework.

1.1 A replicated study that empirically confirms that the primary reason evacuees illegally re-enter cordons is to attend to their companion animals (Glassey et. al., 2022).

1.2 An empirical novel study that that there is a distinct failure to learn from previous emergencies within the context of animal disaster management (Glassey et. al., 2021).

1.3 A major report presented to the New Zealand Parliament on the need for animal disaster management law reform (Glassey, 2019a).

1.4 Identification of challenges facing users of disability assist dogs during emergency evacuation (Glassey, 2014, 2019a, 2021b; Glassey & Wilson, 2011).

Objective 2: To develop evidence based remedies and best practice to address legal and policy gaps specific to New Zealand's animal disaster management framework.

2.1 Research conducted has led to local government policy change, namely the first animal disaster management bylaw (Appendix 3).

2.2 Development of the world's first national disability assist dog identification tag, protected by emergency management regulation (Glassey, 2014, 2019a, 2021b; Glassey & Wilson, 2011).

2.3 Novel published legal analysis of rescue, seizure and disposal highlighting current laws are not effective and that the current CDEM act omits a disposal procedure for things seized, including animals (Glassey, 2019a, 2020a).

2.4 Report to the New Zealand parliament identifying best practices, necessary legal amendment and policy advice to enhance animal disaster management framework (Glassey, 2019a).

2.5 Acknowledgement by Director of Civil Defence (Appendix 4) that matters raised in the report (Glassey, 2019a) will be considered in the scope of the forthcoming review of the National Civil Defence Emergency Management Plan.

Objective 3: To advance the global body of knowledge to promote animal-inclusive community resilience.

3.1 Novel research conducted in Texas, following Hurricane Harvey (2018) to study post-Hurricane Katrina reform, specifically the introduction of the PETS Act, discovering there was a cultural improvement in protecting animals in disaster as a result of the lessons from Hurricane Katrina, but the specific awareness of the new law was not high (Glassey, 2018).

3.2 Development of the Evidence Based Dynamic Doctrine (EBDD) model, may offer a solution to improved lessons management within disaster management (Glassey et. al., 2021).

3.3 Addition to animal disaster management vernacular:

Evidence Based Dynamic Doctrine (Glassey et. al., 2021).

Disaster Hoarding (Glassey, 2018).

Disaster Rustling (Glassey, 2018).

Delegitimization of animal rescue (Glassey, 2021b, 2022).

One Rescue (Glassey, 2022)

3.4 Novel application of *Wicked Problems* public policy and *Do No Harm* humanitarian construct to animal disaster management (Glassey, 2021b, 2022).

3.5 Unique exploration of the importance of integrating technical animal rescue with human focused disaster rescue, in reducing false victim alerts (false flags) and using trained technical animal rescue teams as force multipliers, the development of animal disaster search marking system; and need for the United Nations to consider an INSARAG team typing for animal disaster response teams (Glassey, 2022; Glassey & Thompson, 2020).

Objective 4: To identify areas warranting further research.

4.1 The criteria for a global ranking system to compare country level animal disaster management frameworks be further researched and integrated into the Animal Protection Index.

4.2 The elements of a best practice animal disaster model law be researched and developed, aligned to the global ranking system identified above.

4.3 That given the New Zealand Disability Assist Dog Civil Defence Identification Tag will be coming up to 10 years since its inception, that this scheme is evaluated for effectiveness.

4.4 Lessons Management in disaster management, including the sub-discipline of animal disaster management, requires further research, particularly why lessons identified are not being learned.

4.5 That decontamination processes for animals contaminated in disasters, with particular attention to flooding and radiological incidents, are further researched and best practices disseminated.

4.6 The concept of Animal Disaster Victim Identification, in particular to companion animals, is researched to promote a more compassionate reconciliation of deceased animals with their human guardians.

4.7 That the United Nations, in particular INSARAG, support further research into the role of internationally deployable technical animal rescue teams to benefit an all-of-community response, and research the opportunities for integrated disaster marking systems that accommodate both human and animal rescue information needs.

4.8 That there appears to be substance to continued concerns raised by livestock farmers that the government department response to emergencies in New Zealand is sub-optimal and this warrants further research to quantify the extent of such concerns.

4.9 Emerging issues in animal disaster management, in particular animals in complex emergencies, such as in war or other conflicts, and the respective unique challenges,

notably refugees wishing to cross borders but unable to take their animals (e.g. those fleeing from the pending Ukraine conflict), requires further research.

There is a significant amount of research that confirms that protecting pets during disasters is beneficial to protecting human life, enhances psychosocial care, reduces resource and financial demands on public safety agencies, and improves rapport between the public and officials. The issues facing animal disaster management are complex and multifaceted. The public policy construct of *wicked problems* may well be a way to better relate to the challenges. Although we are seeing improved recognition of the benefits of animal disaster management interventions, much of this progress has been specific to the United States, as has the generation of research. The major gaps in New Zealand-centric animal disaster research include evaluating the effectiveness of the national legal and policy framework, empirical analysis of community experiences of domestic emergencies affecting animals and evaluating the effectiveness of learning from previous emergencies.

Appendix 1: Sole Author Publications

Publications provided as separate digital file:

Glassey, S. (2022). Animal Disaster Management. In A. Knight et al., (Eds.), *Routledge Handbook on Animal Welfare*. Oxfordshire: Routledge.

Glassey, S. (2021a). Assistance dogs and disaster: It's an assistance dog. Yeah, right! *Australian Journal of Emergency Management*, 36(3), pp. 7-8.

Glassey, S. (2021b). Do no harm: a challenging conversation about how we prepare and respond to animal disasters. *Australian Journal of Emergency Management*, 36(3), pp.44-48.

Glassey, S. (2020a) Legal complexities of entry, rescue, seizure and disposal of disaster-affected companion animals in New Zealand, *Animals*, 10(9), pp. 1–12. doi: 10.3390/ani10091583.

Glassey, S. (2020b). Animal Welfare and Disasters. In E. Stern, (Ed.), *Oxford Encyclopedia of Crisis Analysis*. Oxford: Oxford University Press.

Glassey, S. (2019a) *No animal left behind: A report on animal inclusive emergency management law reform*. Wellington: Animal Evac New Zealand.

Glassey, S. (2018) 'Did Harvey learn from Katrina? Initial observations of the response to companion animals during Hurricane Harvey', *Animals*, 8(47), 1–9. doi: 10.3390/ani8040047.

Glassey, S. (2014b) ‘Shooting them isn’t the answer: Why pets matter in disasters’. In *Australia & New Zealand Disaster Management Conference: Earth, Fire & Rain* (pp. 47–54). Gold Coast, Australia.

Appendix 2: Co-Authored Publications

Publications provided as separate digital file:

Glassey, S., Liebergreen, N., King, M. & Rodrigues Ferrere, M. (2022). *It was one of the worst days of my life: Companion animal owners’ experiences of the Edgecumbe 2017 flood in Aotearoa New Zealand*. Manuscript submitted for publication.

- 90% Research, 60% Writing

Glassey, S., Rodrigues Ferrere, M., & King, M. (2021). Lessons lost: A comparative analysis of animal disaster response in New Zealand. *International Journal of Emergency Management, 16*(3), 231-248.

- 90% Research, 90% Writing

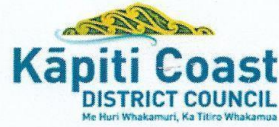
Glassey, S., & Thompson, E. (2020). Standardised search markings to include animals. *Australian Journal of Emergency Management, 35*(1), 69–74.

- 95% Research, 95% Writing

Glassey, S. & Wilson, T. (2011) Animal welfare impact following the 4 September 2010 Canterbury (Darfield) earthquake, *Australasian Journal of Disaster and Trauma Studies, 2011*(2), 49–59.

- 80% Research, 80% Writing

Appendix 3: Bylaw Change - Kapiti Coast District Council



08 April 2019

DCB-12

Steve Glassey
Animal Evac New Zealand Trust
PO Box 216
Wellington 6140

Tēna koe,

Kapiti Coast District Council 2019 Dog Control Bylaw and 2019 Dog Control Policy

Thank you for taking part in the Dog Control Bylaw and Dog Control Policy review. Overall our Councillors were pleased with the review process, and appreciated the contributions of all 101 submitters.

On 14 March 2019, the Councillors voted to:

- Adopt the Kapiti Coast District Council 2019 Dog Control Bylaw; and
- Adopt the Kapiti Coast District Council 2019 Dog Control Policy.

The new Bylaw and Policy can be found on our website at www.kapiticoast.govt.nz/bylaws and www.kapiticoast.govt.nz/policies.

We found your submission very informative, and it was instrumental in some of the changes that have occurred in the review of this bylaw.

Thanks again for your contribution. The success of our work relies on community members sharing their input with Council in order to ensure that we make bylaws and policies that support a stronger Kāpiti. Our review of the Dog Control Bylaw and Policy contributes towards our long term goal to maintain a resilient community that has access to basic needs and feels safe and connected. Council staff will begin to roll out new signage and education material to ensure that our community are informed of the new rules.

Ngā mihi

K Gurnathan JP MA
MAYOR, KĀPITI COAST DISTRICT

Appendix 4: National Plan Review Scope



**Ministry of Civil Defence
& Emergency Management**

Te Rākau Whakamarumarū

Steve Glassey
steve@publicsafety.institute

Ref:4114813

4 March 2019

Dear Steve,

Thank you for the report 'No animal left behind: A report on animal inclusive emergency management law reform'. This is a worthy piece of work that raises a number of important matters for consideration.

As you would be aware, arrangements for animal welfare in emergencies are included in the National Civil Defence Emergency Management (CDEM) Plan 2015 and the Guide to the National CDEM Plan 2015.

Implementation of those arrangements is ongoing and we continue to work with the Ministry for Primary Industries to coordinate with support agencies through the national Animal Welfare Subgroup. Regional level planning for animal welfare in emergencies is progressing with CDEM Groups. However, while animal management planning is improving, we acknowledge that more could be done to develop animal welfare arrangements. As such, we will continue to work with partner agencies to support improvements in animal welfare emergency management through relevant work programmes.

Further, the National CDEM Plan will be reviewed in the near future and the matters raised in the report specific to this regulation will be considered in the scope of the review.

Thank you again for bringing these matters to our attention.

Yours sincerely

Sarah Stuart-Black
Director CDEM

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(* Denotes papers that form part of thesis)

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A critical evaluation of the companion animal disaster management framework in New Zealand

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PhD by Publication Portfolio

Appendix 1: Sole Author Publications

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ROUTLEDGE
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ANIMAL DISASTER MANAGEMENT

Steve Glassey

Introduction

The Australian Black Summer fires of 2019–2020 that decimated over three billion animals (World Wildlife Fund, 2020) served as a harsh reminder of hazards we humans choose to create. Disasters are not natural, nor are they an event. They are a process manufactured and implemented by people and their choices (Kelman, 2020, p. 15). Definitions of what constitutes a “disaster” also tend to be anthropomorphic and fail to recognise animals in their terminology, often relegating such sentient beings as environmental impacts or property loss. Humans are increasingly becoming more at risk from natural hazards such as floods, storms, drought, and fires, and this increase is strongly correlated with urbanisation, population growth, and climate change (Haddow et al., 2017). Animals, however, are becoming more vulnerable to these hazards, also through farming intensification, loss of natural habitat, and failing animal-health infrastructure – again all caused by human action. It is only humans – albeit with varying degrees of influence, power, and resources – who can mitigate these risks. This power imbalance places a moral obligation on humans to act to protect animals from the effects of disaster that they have created.

Though sometimes used interchangeably by lay persons, emergencies and disasters are distinctly different. An emergency is an event that threatens life or property, whereas a disaster is an emergency that is beyond existing capacities and requires outside assistance. To avoid confusion with veterinary emergency medicine, animal disaster management is more easily understood when engaging a wide range of audiences from veterinarians to disaster managers. The goal of animal disaster management is to create animal-inclusive resilient communities.

Why animals matter in disasters

The earliest example of the protection of animals from disaster can be found in the biblical story of Noah’s Flood, where Noah and his family were spared by God from a cataclysmic flood after being directed to build an Ark to house themselves and two of every kind of animal (New International Version 2011, Genesis 7). Though science and religion may not agree on the existence of such an Ark, the cultural significance of non-human species being pivotal to the existence of human life within religious texts should not be disregarded.

It is estimated that more than 40 million animals are affected by disasters annually, with this number increasing in the Anthropocene (Sawyer and Huertas, 2018, p. 2). However, the genesis of animal disaster management in modern times is largely due to the lessons and reforms following Hurricane Katrina. In August 2005, Hurricane Katrina struck the Gulf Coast of the United States of America. In its wake, it left US\$110 billion in damage and 1,836 people dead, making it the third-deadliest disaster in US history. This disaster also highlighted the importance of companion animal emergency management, with over 50,000 pets being left behind during the evacuation of New Orleans, and 80–90% of these pets perishing. What was anticipated to be over within a few days turned into a catastrophe and triggered the largest animal rescue operation in US history – an operation that rescued approximately 15,000 pets, supported by some 5,000 volunteers. Prior to 2005, it was Federal Emergency Management Agency (FEMA) policy that pets should be left behind during evacuations. This has now been completely changed with the introduction of the Pets Evacuation & Transportation Standards (PETS) Act. The single most compelling fact for public safety officials to learn from Hurricane Katrina was that approximately 44% of the people who did not evacuate stayed, at least in part, because they did not want to leave their pets behind (Fritz Institute 2006). Indeed, Heath and Linnabary reinforce this finding saying that:

There is no other factor contributing as much to human evacuation failure in disasters that is under the control of emergency management when a threat is imminent as pet ownership. Emergency managers can take advantage of the bond people have with their animals to instill appropriate behavior amongst pet owners in disasters.

(2015)

The human–animal bond has been the primary focus of animal disaster management, often using the well-documented phenomena of humans placing themselves at risk for animals, as a means to tackle animal welfare concerns through a paradigm of “saving animal lives, saves human lives”. And this is particularly true of companion and service animals that have benefited the most in terms of regulatory changes to protect them from disaster impacts, despite them being the least vulnerable, given that human guardianship affords them protection. It is the animals that do not have, or have little to no, human–animal bonds, such as wild animals and those exploited for consumption, that are afforded the least levels of protection, making them significantly more vulnerable to the impacts of disaster. Society as a whole generally ranks animals through a sociozoologic system, which classifies animals in a structure of meaning that allows them to define, reinforce, and justify their interactions with other beings (Irvine, 2009, p. 7). This construct of a sociozoological scale gives further weight to the understanding that disasters are not natural; they are manifested by humans, determining which animal species are less important than others, thus making some animals more vulnerable than others. Humans are largely responsible for making animals vulnerable to disaster, but unlike humans, animals often do not have a choice in the construction or exposure of their aggravated vulnerabilities. This vulnerability can be exacerbated by weak animal–health infrastructure which is regarded as a root cause in companion animal disasters (Heath and Linnabary, 2015), along with myriad other complex *wicked problems* within a public policy and planning context (Glasse, 2020a). Even the legal status of animals can contribute to increasing their vulnerability to the effects of disaster. Treated as property, animals are made “legally inferior to people” and therefore “usually afforded low priority in emergency response initiatives” (Best, 2021). The reality of animal disaster laws is that they seldom have little to do with sentience or the welfare of animals; the drivers for such laws are more focused on protecting people through improving human evacuation compliance

and preventing humans from returning into hazardous disaster zones to save animals, especially companion animals.

Given the impact on human and environmental well-being arising from animals being affected by disasters and emergencies, the outdated reference to “animal welfare emergency management” by some governments in their emergency planning fails to recognise these relationships and is counter-productive to making animals as a priority in disaster risk reduction, within a One Health or One Welfare environment.

Phases of disaster management

Within the profession of emergency management (also known as disaster management), a life-cycle approach is taken to mitigate hazards, prepare for the impacts of residual risks (the remaining risk after mitigation controls have been applied), respond to disasters to protect life and property, and support affected communities to recover. These are typically known as the four phases of comprehensive disaster management (Haddow, 2011, p. 9), though some countries such as New Zealand refer to these phases as Reduction, Readiness, Response, and Recovery respectively (Glassey and Thompson, 2020).

Prevention phase

Within the context of animal disaster management, the prevention phase includes elimination of the risk or reducing it to an acceptable level, such as banning intensive farming or at least reducing the associated risks, such as not building animal housing facilities on flood plains. Other mitigatory measures include seismic bracing of animal caging systems in regions prone to earthquakes (such as New Zealand), and the installation of fire suppression systems and availability of water for firefighting, to name just a few. However, there is often a residual risk despite these treatments being applied, and therefore preparing for the eventuality of the hazard is required.

Prevention activities can extend to the passage of laws to better afford protection to animals to avoid them being exposed to disaster hazards in the first place. In Texas, under Section 821.077 of the Health and Safety Code, it is illegal to restrain a dog outside and unattended during extreme weather or when such associated weather warnings have been issued (State of Texas 2007). Though companion animals are less vulnerable than captive production animals, dogs and cats often receive higher levels of legal protection. Again, this illustrates that animals are likely ranked by their attachment with humans, rather than their raw vulnerability alone. Intensively farmed animals such as pigs and chickens are extremely vulnerable to the impacts of disaster. Often these facilities are built on remote and hazard-prone land, which makes the land less expensive and which is therefore perceived to be more profitable to operate a business on. Local ordinances could be used to prevent the building or operation of intensive farms in flood plains, largely eliminating the flood risk to these animals. In 1999, Hurricane Floyd devastated parts of North Carolina. Approximately 2.8 million poultry, 30,500 hogs, 2,000 cattle, and 250 horses drowned during this disaster (Green 2019, p. 2).

In the 2020 Canterbury earthquake, over 20,000 chickens died or were destroyed as their caging systems collapsed (Glassey and Wilson 2011). The installation of seismic bracing for caging would likely have prevented many of their deaths.

Laboratory animals are seldom considered in disaster management and there is limited research in this area. These animals are always confined to cages, often fully dependent on automated feed, watering, and environmental control for their survival, and when these systems fail, their welfare is compromised severely. In 2006, a generator failed at the University of Ohio, and

when electricity was restored it triggered the heating system and the temperature reached 105°F (40.5°C). Nearly 700 animals died (Irvine, 2009, p. 85). Though some producers may perceive mitigation measures such as automatic fire suppression, backup ventilation systems and seismic bracing to be expensive, disaster risk reduction makes economic sense. According to the United Nations, every dollar invested in risk reduction and prevention can save up to 15 dollars in post-disaster recovery (United Nations Office for Disaster Risk Reduction 2020a).

Zoos and aquaria also have been impacted by disaster and are often overlooked, with emergency planning requirements generally focused on loss of containment of dangerous animals and protecting the public, rather than the large-scale negative animal welfare impacts on their captive animals that disasters can have. In 2002, the Prague Zoo was flooded leading to over 150 animals being killed (Irvine 2009, p. 124), and in the Afghanistan post-war period of 2001, the animals at the Kabul Zoo were left without sufficient care and attention, leaving many to perish from starvation and the following harsh winter conditions (Sawyer and Huertas, 2018, p. 51).

As US and coalition troops withdrew from Afghanistan in August 2021, Kabul, including its municipal zoo, fell under the control of the Taliban. The Asia for Animals coalition (AFA) reported that no animals had been harmed and that the Taliban was ensuring the zoo continued to operate as normal (AFA 2021). It is unclear if the continued protection of these zoo animals was a conscious decision of the Taliban, whether it be as a lesson from the 2001 post-war period, or even part of their *hearts and minds* campaign to purport a new, changed, and more humane style of governance. The plight of animals during the US withdrawal indeed captured the world's attention and caused outcry when it was alleged American forces had left behind their military service dogs, which was later found to be incorrect. The animals photographed in airline crates at the Hamid Karzai International Airport were in fact dogs from the Kabul Small Animal Rescue who were hoping to have these animals and their staff evacuated (DefenseOne 2021). Public reaction also successfully pressured the United Kingdom government to allow Pen Farthing, a former British Marine who operated the Nowzad animal sheltering charity in Kabul, to evacuate dozens of dogs and cats to the UK on a privately chartered plane (Washington Post, 2021). Farthing was criticised by government leaders including British Defence Secretary Ben Wallace for supposedly putting the lives of animals ahead of people (Washington Post, 2021).

When the *Aquarium of the Americas* lost backup generator power during Hurricane Katrina, over 10,000 fish suffocated (Irvine 2009, p. 13). Having resilient infrastructure is key to the survival of captive animals dependent on automated environmental, feeding and watering systems. Similarly, in the 2011 Christchurch earthquake, the Southern Experience Aquarium suffered irreparable damage, and despite rescue efforts an undisclosed number of fish were euthanised due to poor water quality and the generator failing (Potts and Gadenne 2014, p. 217).

Animals that are at the whim of humans for their survival are most vulnerable to disaster and those that are live-exported by sea are no different. In 2019, the livestock carrier *Queen Hind* capsized with over 14,000 sheep on board bound for slaughter. The conditions on board prior to the capsize were cramped. Despite the efforts of animal rescue specialists from Four Paws and the Animal Rescue and Care Association (ARCA) of Romania, more than 13,820 sheep drowned or died because of the capsizing. It was later found that the vessel had secret floors that would have contributed to overloading, and that affected the vessel's stability (Zee, 2021). The prohibition of live export would have prevented this human-caused disaster.

Preparedness phase

As part of the PPRR framework, disaster planning within the preparedness phase provides an opportunity to improve response effectiveness to protect life and property, as well as reducing

the impacts on communities under a pre-agreed approach, which aimed at providing role clarity across organisations. Classic scholars such as Auf der Heide (1989) promote a fundamental principle that emergency plans should be based on *likely*, not *correct* behaviours. From a traditional emergency service perspective, it would be seen as *correct* that, when people are told to evacuate and leave their companion animals behind, they would do so compliantly. However, it is more *likely* that the guardians of these animals when faced with evacuation may refuse to evacuate unless they can take their animals, as experienced in Hurricane Katrina (Irvine, 2009) and disasters such as the Fukushima nuclear incident following the 2011 Japanese earthquake and tsunami (Kajiwara, 2020).

Developing animal-inclusive emergency plans helps to clarify the roles and responsibilities of parties during a disaster. So as not to create dependency and complicate evacuation logistics, it is critical that the guardians of animals take responsibility for their welfare. This responsibility is often enshrined in law, and as disasters are not natural, the obligations on such guardians are not necessarily eroded. In some countries or states, there are additional legal responsibilities for ensuring the safety of animals exposed to foreseen extremes of weather (Glassey, 2018; 2019; 2020b).

Though there are many different models, the Emergency Management Accreditation Program (EMAP) standard is one that is flexible to apply to animal disaster planning at all levels (national, state, local). Using the EMAP standard (2019) as a benchmark, emergency management plans should include the following considerations:

- Program Management, Administration and Finance, and Laws and Authorities;
- Hazard Identification, Risk Assessment, and Consequence Analysis;
- Hazard Mitigation;
- Prevention;
- Operational Planning and Procedures;
- Incident Management;
- Resource Management, Mutual Aid, and Logistics;
- Communications and Warning;
- Facilities;
- Training;
- Exercises, Evaluations, and Corrective Action;
- Emergency Public Education and Information.

In addition to the core standards above, animal-specific considerations should include:

- Lessons from previous emergencies;
- Euthanasia and depopulation;
- Carcass disposal;
- Humane trapping in evacuated areas;
- Feeding in place protocols;
- Veterinary considerations (i.e. zoonotic disease management);
- Disposal of unclaimed displaced animals (such as adoption);
- Animal search, rescue, evacuation, sheltering, body recovery, and decontamination.

Though this chapter does not focus on animal disease management, planning considerations from the Good Emergency Management Practice (GEMP) manual published by the Food and Agriculture Organization of the United Nations (FAO) has useful advice, including the advo-

cating that animal-related disaster plans be part of national disaster management arrangements and be able to access related government funding (2011, p. 18). Where countries such as the United States have passed the PETS Act that secures federal funding for companion and service animal emergency management activities, despite reports presented to Parliament, the New Zealand government has continued to exclude animal disaster management from its national disaster response and recovery funding arrangements (Glasse, 2019).

The value in the planning phases is often not the end document, but more so the process that should engage stakeholders to develop a common appreciation of the hazards, and of how a coordinated response should be conducted. Where plans are developed in isolation they typically end up as a *box ticking* exercise, also known as suffering from the “paper plan syndrome” (Auf der Heide, 1989).

Animal disaster management planning approaches are still generally in their infancy, given that in most part until the passage of the US PETS Act in 2006, there were few regulatory drivers for such planning around the world. Much of the planning efforts have focused around adopting human-centric approaches, which makes sense for reasons of compatibility, efficiencies, and giving legitimacy to efforts. However, such adopted planning models were developed and refined for a single species – humans, without due regard to the other species. There are approximately 7,700,000 species of animals on earth (Mora et al., 2011) and this variety of non-human species creates extra challenges for animal disaster planners, who often must develop plans that can accommodate end users (being animals), from a few grams to hundreds of kilograms, that are uncommunicative and likely to hide, escape, or attack. It would appear that helping humans in disasters is easier in comparison.

In 2014, the National Planning Principles for Animals in Disasters (NPPAD) was released by the National Advisory Committee for Animals in Emergencies and endorsed by the Australia–New Zealand Emergency Management Committee (Trigg et al., 2021). The NPPAD provided 8 principles for the planning process and 16 further principles to be included in actual plans. In 2020, it was found that in Australia there was moderate awareness of the principles across stakeholders, and low to moderate implementation of the principles (Trigg et al., 2021). These principles – though developed primarily in Australia – are generally applicable to most other countries and may be of benefit to the planning process.

The preparedness phase could include creating and testing emergency plans for animal housing facilities, public education campaigns around animal disaster preparedness, training animals to be familiar with evacuation processes and transport, carrying out microchipping campaigns, subscription to early warning systems for floods, fires, and the like, and training for animal disaster responders in incident command, wildland fire, and flood safety. This ensures that when the disaster occurs, the response to protect life and property can be at its most effective, which may include pet-friendly evacuation centres, emergency animal fostering, veterinary disaster care, and rescues of animals.

Education, training, and exercising are also critical to the preparedness phase. The range of animal disaster management courses and education programmes is slowly increasing. Information sharing and networking continue to help advance this emerging professional discipline and forums such as the National Alliance for State and Agricultural Emergency Programs (NASAAEP) (Green, 2019, p. 3) and the Global Animal Disaster Management Conference (GADMC) have made significant contributions to promoting animal-inclusive resilient communities.

Complimentary to the range of existing planning approaches, Vieira and Anthony (2021) developed six ethically responsible animal caretaking aims for consideration when developing disaster management plans and policies in the Anthropocene. They include (1) saving lives

and mitigating harm; (2) protecting animal welfare and respecting animals' experiences; (3) observing, recognising, and promoting distributive justice; (4) advancing public involvement; (5) empowering care givers, guardians, owners, and community members; (6) bolstering public health and veterinary community professionalism, including engagement in multidisciplinary teams and applied scientific developments. Armed with the Australian NPPAD, the EMAP standard and the six ethically responsible caretaking aims, animal disaster planners now have tools to create effective plans.

Response phase

Although the response phase is often the most publicised, it is often the most short-lived. The window of time to rescue animals before they die of injuries, disease, thirst, or hunger is often small and requires immediate intervention. In agriculture, it is argued that insuring animals may lead to negative animal welfare outcomes, as often the trigger for payment is the death of such animals (Sawyer and Huertas, 2018). It then becomes financially attractive for the guardians of livestock to allow them to perish. However, restocking of herds following disasters has frequently been found to be ineffective, leading to longer-term economic harm to farmers, and there is a driver to encourage early intervention to protect surviving stock as a better alternative (Sawyer and Huertas 2018).

An example of this ineffective restocking occurred in Myanmar in 2008, following Cyclone Nargis, where areas suffered large losses of working buffalo that were critical to harvesting rice. Without these animals the flood-contaminated lands could not be rendered productive, and so new working buffalo were introduced. However, this restocking programme failed to properly address animal-health considerations and led to the introduction of new diseases and further mortality of such stock (Sawyer and Huertas, 2018). "Poor support for these animals, often worked harder in the aftermath of a disaster, or poorly planned restocking programmes can make a bad situation worse very rapidly" (Sawyer and Huertas, 2018, p. 7). Since the early 2000s humanitarian aid and veterinary professionals started to critically reflect whether their interventions to protect livestock following disasters were effective. This led the Food Aid Organization of the United Nations (FAO) and other organisations to develop and publish the Livestock Emergency Guideline and Standards (LEGS 2017). The LEGS manual provides general information and technical standards to improve the quality and livelihoods impact of livestock-related projects in humanitarian situations (LEGS 2014). However, LEGS focuses on assisting communities in less developed countries and does not provide standards for disaster interventions involving other non-livestock animals such as companion animals.

Where animal rescues are carried out there is often a disconnect between animal interest groups undertaking this function and the human-centric rescue authorities. Often these "animal rescuers" are spontaneous groups without authority, training or equipment and this *delegitimisation of animal rescue* particularly hinders those specialist animal disaster rescue teams who attempt to seek a legitimate and integrated animal-human disaster response (Glassey 2021).

The delegitimisation of animal rescue is defined as the:

Sub-optimal response by animal interest groups who respond to assist animals in emergencies or disasters in an unsafe or illegal manner, which consequently makes it more difficult for bona-fide emergency animal rescue groups to be accepted and used by authorities and the community in future interventions.

(Glassey 2021)

Aside from potentially putting human lives at risk, delegitimisation has negative effects for animal welfare through eroding trust between the animal response community and emergency service organisations. Ultimately, this loss of trust and confidence may lead to animal protection in disasters being considered a hindrance rather than an opportunity to improve human and animal safety. Studies have shown that humans do place themselves at risk for the needs of animals, such as breaching cordons to attend to their animals or failing to evacuate if they are unable to take their animals (Heath, 1999; Heath et al., 2001; Heath and Linnabary, 2015; Irvine, 2009; Glassey, 2010; Potts and Gadenne, 2014; Taylor et al., 2015).

During the bushfires in Australia in the summer of 2019 and 2020, the loss of three billion animals gained global attention, as well as responses from domestic and international animal interest groups. Such groups formally or informally identify as “animal rescue”; however, in the disaster response context, this is confusing and misleading to emergency service organisations. These groups use the term “animal rescue” whereas it might be more appropriate if “animal care”, “welfare”, or “rehomeing” were used. The use of “animal rescue” undermines the credibility of emergency services organisations that rescue animals, and some may regard the term “rescue” as an embellishment of capability.

Unfortunately, the lack of animal-inclusive emergency management planning results in animal interest groups responding to disasters without appropriate authority, training, or equipment, as observed in by Glassey and Anderson (2019) in the Nelson, New Zealand fires of 2019. Even animal interest groups that have a focus on animal disaster response have been found wanting, such as during the summer bushfires where promotional videos showed personnel working with flames and smoke around them, and also without basic protective equipment (Glassey 2021). The wearing of flame-retardant apparel, safety boots, helmets, goggles, and gloves is a rudimentary requirement for working on firegrounds, as – even days and weeks after the fire has gone through – vegetation and underground fires are common, and create a risk for personnel to step or fall into. The risk of branches and trees falling during and after fires remains substantial and requires helmets to be worn. The use of videos or pictures showing animal interest groups not adhering to basic safety requirements delegitimises animal rescue and reduces the level of confidence and trust of emergency services organisations (Glassey, 2021).

The disconnect is compounded with animal groups setting their own standards for training, often not recognised by public safety agencies. In urban search and rescue operations, internationally accepted search markings placed on collapsed or damaged structures (such as following an earthquake) fail to incorporate animal rescue, leading to confusion when animal rescue groups place their own markings (Glassey and Thompson 2020).

Another aspect of delegitimation of animal rescue occurs when animal interest groups respond to an emergency and claim pre-existing animal welfare issues as being caused by, or related to, the event. This could include taking footage of stray animals in a damaged city and suggesting the animal was in need of rescue, when it was, at that time and prior to the disaster, a stray animal; or showing dogs without kennels or being chained up following floods, when the dogs were in these conditions prior to the flood. Such flooding may have exposed these vulnerabilities, but may not have been the cause of such animal welfare concerns. It is argued that prevention is better than post-event response, and animal interest groups wanting to reduce animal vulnerability to disasters could focus efforts on mitigation and strengthening weak animal-health infrastructure to make a sustainable impact on improving animal welfare (Glassey, 2021).

Where animals are rescued from a disaster-affected area, if a guardian is not located, affected animals are often put into temporary accommodation. Disasters by definition exceed local capacity, so often day-to-day facilities such as animal boarding facilities, humane shelters, and pounds may be unavailable due to damage or exceeding capacity, not to mention that often

these organisations may also be attending to their own animals and disaster responsibilities. Where possible, existing facilities and service providers should be used as they generally offer higher levels of animal welfare to that of temporary shelters, and their use also stimulates economic recovery. Much has changed in the past decade, with the United States leading many new approaches to emergency companion animal sheltering. Traditional Animal-Only Shelters (AOS) are those where the care of the animals falls to the sheltering team. Animal-Only Shelters can be appropriate in some situations, but they are generally not sustainable when a large number of carers is required, making this approach difficult to scale up for any wide-area disaster. It has also been found that these shelters are 25 times more expensive to operate than Co-Habitation Shelters (CHS) and five times more expensive than Co-Located Shelters (CLS) (Strain 2018). As animals are separated from their guardians in Animal-Only Shelters, this can increase stress in the animal, which can heighten the risk of disease. Where companion animals are co-located, evacuees are accommodated in a building nearby to where the animals are housed, allowing guardians to maintain care and responsibility for their pets. This provides routine and sense of purpose and increases the guardian–animal interaction time. The other option – which is just gaining traction in the US – is co-habitation, where humans and their companion animals are housed as a single-family unit. This often leads to reduced stress in both the animal and the human, as pets often provide a familiar psychosocial coping mechanism and animals are typically more settled and quieter. The lack of providing suitable, pet-friendly sheltering leads not only to poor animal welfare outcomes, but also can compromise human safety – especially for those with strong attachments to their animals. This was the case following the 2011 Japanese earthquake, tsunami, and nuclear disaster, where lonely elderly people were left with no option but to sleep in their cars near evacuation centres that did not permit animals, only to be socially isolated, suffer hypothermia in the winter, and, on one occasion, Deep Vein Thrombosis (DVT) from cramped sleeping and sitting conditions (Kajiwara, 2020, p. 66). Accepting that “Feeding in Place” can also be an alternative to emergency animal sheltering in some circumstances, the bottom line is that Co-Habitated Sheltering is the gold standard (Green, 2019, p. 147).

The lack of pet carriers has been linked as a causal factor in evacuation failure (Heath, 1999, p. 209), particularly for those with multiple small animals. It is now common practice for specialist animal disaster response charities like Animal Evac New Zealand to go into areas likely requiring evacuation or under evacuation notice and distribute pet carriers to improve evacuation compliance. This leads to better human and animal safety outcomes (Glassey and Anderson, 2019).

When confronted with the need to evacuate, some households may even intentionally partially evacuate to leave someone behind to attend to their animals, whilst the remainder leave for safety (Taylor et al., 2015). Where animals have been left behind in an evacuated disaster zone, many often return to rescue or attend to their animals, which may put themselves or public safety responders at risk, as in the 2010 Haiti earthquake (Sawyer and Huertas, 2018, p. 10), Canterbury earthquakes (Potts and Gadenne, 2014), and Edgcombe flood (Glassey et al., 2020).

It is common for humans to put themselves at risk to protect their animals or act protectively, such as in the case of the Weyauwega train derailment in 1996. Following the derailment of a train carrying large quantities of hazardous materials, the entire Wisconsin township consisting of 1,022 households was hastily evacuated. Within a couple of days, pet owners attempted to breach the cordon to rescue their animals. Frustrated owners on “behalf of the animals” then phoned through a bomb threat to emergency operations centre. This led to significant negative media attention which prompted the state Governor to order the National Guard to enter with armoured vehicles to assist with the rescue of hundreds of pets left behind (Irvine 2009, p. 38).

The loss of companion animals in particular can have devastating mental health impacts. Hunt et al. (2008) found that survivors of Hurricane Katrina were just as likely to suffer post-traumatic impacts from losing their companion animal as they were from losing their home. Disasters can also draw out the worst in humanity and create opportunities to exploit those vulnerable in the community by individuals, such as *disaster paedophiles* who use the state of chaos to traffic unaccompanied minors (Montgomery, 2011). Animals too can be vulnerable from similar abuse as observed in Hurricane Harvey with reports of *disaster rustling* and *disaster hoarding*, the latter involving animal hoarders who used the disaster as an opportunity to restock their hoard (Glasse, 2018).

Recovery phase

Even as the response phase commences, so should the initial planning for the recovery phase. Recovery can be also described as the regeneration of the community, and this phase also needs to include considerations for animals and their welfare. This often can include the supply of animal-friendly rental accommodation, reunification of displaced animals, and restoration of veterinary and animal welfare services. Recovery should *build back better*, and the United Nations' definition, which is human-centric, is defined as:

The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment.

*(United Nations Office for Disaster Risk Reduction,
2020b)*

The lack of post-disaster, pet-friendly accommodation has constantly been identified as an issue, from Haiti where, following the 2010 earthquake, internally displaced persons in tented camps were unable to have their companion animals (Sawyer and Huertas, 2018, p. 10), to those who returned to radioactive exclusion zones near Fukushima to secretly attend to their animals, or were sleeping in their vehicles in freezing winter conditions with their animals, as animals were not allowed in temporary mass shelters (Kajiwara 2020). Similarly, in Christchurch following the 2011 Canterbury earthquake, pet-friendly accommodation became very scarce, forcing owners to relinquish their animals, causing much distress for both humans and animals (Potts and Gadenne 2014).

The stressful impacts on people and animals during and following a disaster can be suffered for months. Those people who respond to help disaster-affected animals, from volunteer rescuers to professional veterinarians, are not immune from the impacts of being exposed to the distressing experiences often found in a disaster. In a global study of veterinary disaster responders, it was found that 51% exhibited behavioural health issues during their response and up to 6 months afterwards (Vroegindewey and Kertis 2021). It is important for anyone considering becoming involved in animal disaster response to have access to psychological first aid training and resources.

The recovery phase should also include a process to reflect upon the response, and even on the recovery. Commonly following a response, an After Action Report (AAR) is written following a debrief of organisations involved in the response. The AAR is an important first step in the lessons management process, which aims to improve not only subsequent responses, but enhancements to the wider phases of comprehensive emergency management. Largely, AARs

are not mandatory, nor is the format, content, and dissemination. Though AARs are critical to improving subsequent responses, which should lead to better public safety and animal welfare outcomes, they are seldom shared, often due to fear of deficiencies bringing political embarrassment or reputational harm.

The lessons identified in AARs are unfortunately seldom learned. A study by Glassey et al. (2020) found that only 7% of applicable lessons were learned in the context of animal disaster response arising from the 2017 EdgECumbe Flood, to the 2019 Nelson Fires. The comparative analysis of AARs for both these events found that common problems related to training, capability, law, policy, planning, information management, and incident management, were repeated, and lessons seemingly not learned. The assumption that lessons are learned from previous disasters requires closer examination.

Recommendations

To improve animal welfare in disasters, much work is needed. Firstly, reducing animals' vulnerability to hazards must be made a priority. As part of a comprehensive emergency management approach, frameworks to create animal-inclusive community resilience must include evidence-based laws and policies. Such frameworks need to ensure guardians take primary responsibility for animal welfare in disasters, but must also provide for the monitoring and performance of government and partner organisations who facilitate and coordinate animal disaster management. There is currently no system to compare the effectiveness of animal disaster management frameworks across countries. It is recommended that the Animal Protection Index (World Animal Protection 2020) be revised to include an animal disaster management indicator, or that a global animal disaster management index is developed similarly to the National Capabilities for Animal Response in Emergencies (NCARE) as developed by the American Society for the Prevention of Cruelty to Animals (Spain et al., 2017). Model laws for animal disaster management should also be developed and considered as part of the revised or new indices. Other frameworks such as the Five Domains (Mellor 2017) could benefit from further research with respect to their application to animal disaster management.

There also needs to be more of a concerted effort to mainstream animal disaster management, away from being an "animal issue". The One Health – One Welfare approaches offer opportunities to connect animal and human welfare, and environmental sustainability, all in the context of disaster management and in line with international disaster risk reduction frameworks such as the Sendai Framework (Dalla Villa et al., 2020). Travers et al. (2021) also give recommendations to enhance the linkage between One Health and animal disaster management, including

five overlapping spheres of action: (i) integrate pets into disaster management practice and policy; (ii) create pet-friendly environments and related policies; (iii) engage community action in disaster management planning; (iv) develop personal skills by engaging owners in capacity building and (v) reorient health and emergency services toward a more-than-human approach.

Maybe the answer is developing a "One Rescue" paradigm that recognises the benefits and opportunities for public safety when animals are integrated into disaster planning by human-centric authorities, such as having fire and rescue services coordinate animal disaster response to ensure an integrated approach, avoiding duplication of effort, and leveraging capacity from trained and equipped animal disaster responders, effectively acting as force multipliers. This approach positions the protection of animals not as an after-thought in disasters, but a core function that

will lead to better human and animal safety outcomes. This shift also would require those from the “animal” side to step up and gain more credibility within the disaster management profession, through completion of emergency management training, qualifications, and credentials such as the Certified Emergency Manager (CEM®) to supplement animal welfare or veterinary backgrounds. Likewise, those in the human-focused “disaster management side” need to better understand the importance and benefits of including animals in disaster arrangements, through professional development such as World Animal Protection’s PrepVet course and FEMA Independent Study courses on companion animal and livestock emergency planning.

Conclusions

Millions of animals are disaster-impacted every year and this will continue to grow as humans make choices that increase the vulnerability of such animals to an expanding range of hazards, exacerbated through climate change, intensification of animal farming, urbanisation, weak animal-health infrastructure, and poor animal disaster management arrangements. As long as society fails to improve the status quo of animal disaster management, not only is animal welfare compromised, but the safety, well-being, and livelihoods of humans are too. To mitigate these impacts, a coordinated effort to better integrate animal and human disaster management systems, along with improved mechanisms for accountability at all levels, is required. Well over eight million species globally are depending on humans to have the moral compass to step up and address these vulnerabilities, and such action cannot come soon enough.

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It's an assistance dog. Yeah, right!

Steve Glassey

Animal Evac New Zealand



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The prevalence of companion animals as ‘assistance’ animals is increasing in public places in Australia and New Zealand. How might this undermine the important role assistance animals play and how might it dilute their standing for inclusion in emergency planning and during disasters?

While wandering inside the shopping mall in Townsville, north Queensland, I noticed a small white dog on a leash. As the dog weaved a random path in front of its attached human, I wondered if, with such poor discipline, it was pet or an assistance dog. Surely, it must be a pet as it was stopped and patted by passers-by. Why is a pet being allowed inside the shopping mall? Then I saw it was wearing a vest saying it was an ‘assistance dog’. This was no assistance dog. It was more likely to be a much-loved pet whose owner had purchased one of the hundreds of fake service dog vests and

identification cards available online. Who am I to question someone’s medical history or impairment and demand they require an assistance animal or not! This is the dilemma not just for the public, but for those working in evacuation centres when evacuees present their companion animals falsely as legitimate assistance dogs.

Assistance dog fraud is not new, but only in the Northern Territory and the Australian Capital Territory is it illegal to pretend a dog is a bona fide assistance dog when it is not. In other states, it



Assistance dogs are trained to help people undertake daily tasks as well as provide emotional support.

Image: Assistance Dogs Australia



The New Zealand Civil Defence Disability Assistance Dog identification tag.

Image: Steve Glassey

is legal for people to purchase, without verification, a range of assistance dog identifications and paraphernalia.

Under the *Disability Discrimination Act 1992 (Cth)*, assistance dogs are specifically defined and are afforded guaranteed access to all public places in Australia. This federal law is supported by state and territory laws that provide further provisions for assistance dogs to be recognised. However, there is no national form of identification and assistance dog organisations prescribe their own identification. This makes the job of evacuation centre workers even more difficult to distinguish what dogs are bona fide assistance dogs and which are not.

The role and status of assistance dogs during disaster is not well researched. What little empirical evidence there is suggests that the challenge of validating the legitimacy of assistance animals in emergency conditions remains unresolved^{1,2} and that the needs of assistance animal users at evacuation centres are not well considered by emergency planners.^{3,4}

In response to the lessons of the 2010 and 2011 Canterbury earthquakes, I led a national project at the New Zealand Ministry for Social Development to create the world's first national-level disability assistance dog emergency management identification tag.⁵ The Honourable Nikki Kaye, the then Minister of Civil Defence, launched the tag system in December 2013. She said:

*In an emergency, the tags will make it easy for certified disability assist dogs to be identified and remain with their owners or, if they become separated, to be quickly reunited.*⁶

The Honourable Nikki Kaye MP (NZ)

Unlike New Zealand, Australia faces a challenge to replicate the identification tag. Australia does not have a regulatory protected civil defence (emergency management) logo that can provide the legal basis for preventing mis-use of the identification. However, an Australian assistance dog tag system that has regulatory protection could be established using the Commonwealth Coat of Arms that has legal protection. Under section 143.1 (1)(a) the *Criminal Code Act 1995*, there may be scope to classify such a tag as a Commonwealth 'document'; that being any paper or other material on which there is writing.

To ensure consistency, each state and territory could procure from a national supplier the minted discs and distribute these to recognised or accredited assistance dog training organisations (similar to certifying organisations under the New Zealand *Dog Control Act 1996*). These recognised or accredited organisations would manage the issuance of the Commonwealth-protected tags, including ensuring the animal's name and microchip were engraved on the blank reverse.

Given the legal frameworks that exist for recognising bona fide assistance animals and the protection of the Commonwealth Coat of Arms, the parts of the jigsaw required to address assistance dog fraud is an opportunity that should be explored. Until then, the challenge of distinguishing pets from legitimate service animals will remain a problem for emergency managers and the assistance dog user community.

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Do no harm: a challenging conversation about how we prepare and respond to animal disasters

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Abstract

What if people responded to disasters to help animals, but their responses created unintended negative animal welfare outcomes or unnecessary barriers for future responses? The axiom of ‘do no harm’ is well established within the humanitarian aid community, however, it is an approach that is not well articulated in the emerging discipline of animal disaster response. This paper discusses the challenges for responding to animals affected by disaster events, the delegitimisation of animal rescue and how some response actions can have long-term negative effects on animal welfare. Recommendations are provided to create credible and sustainable responses into the future.

Introduction

The emerging field of animal disaster science continues to expand in both interest and research. Societal attitudes have changed in recent times with animals afforded more consideration given the human-animal bond that has been well established (Heath 1999, Irvine 2009, Sawyer & Huertas 2018). However, this growth has also given rise to the number of individuals and organisations wanting to help animals affected by disasters, which, though morally applaudable, may have unintended negative consequences for animal welfare (Green 2019). The aim of this paper is to highlight current practices that may contribute to undermining the role that animal disaster response organisations play. As such, corrective actions can be taken to improve coordination and emergency management organisations can maintain operational confidence that should lead to better human and animal welfare outcomes.

Do no harm

The paradigm of responding to emergencies and disasters to help but actually causing harm is well understood in the humanitarian sector. In 1999, Mary Anderson, a globally respected expert in humanitarian interventions, published *Do No Harm: How aid can support peace or war*, which has become the founding text for this approach (Anderson 1999). This followed the 1999 United Nation’s General Assembly Resolution 46/182 that created the first 3 core humanitarian principles, being humanity, impartiality and neutrality. In 1992, the *Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief* was drafted and in 1994 it was adopted. In 2004, the fourth core principle of independence was added by the United Nations General Assembly. The 4 core humanitarian principles were solidified as humanity, impartiality, neutrality and independence. Since it was launched, more than 600 organisations have signed the code, including a few animal disaster response organisations such as World Animal Protection, the Society for the Protection of Animals Abroad and Animal Evac New Zealand (International Federation of Red Cross and Red Crescent Societies 2020). The code provides globally accepted ground rules for humanitarian responses, both in disasters and complex emergencies. The voluntary code enshrines the 4 core humanitarian principles as well as providing further expectations of:

- building disaster response on local capacities
- involving program beneficiaries in the management of aid
- reducing vulnerabilities to future disasters as well as meeting basic needs
- accepting accountability
- recognising disaster ‘victims’ as dignified human beings and not hopeless objects.

The humanitarian system is largely guided by the standards established by Sphere (formerly the Sphere Project). The Sphere handbook includes universally accepted minimum standards for humanitarian response, a Humanitarian Charter that is based on the Code of Conduct, protection principles and 4 technical chapters (Sphere Association 2018). Through the recognition that livestock play an important role in livelihoods of communities, a companion document to the Sphere handbook—the Livestock Emergency Guidelines & Standards (LEGS)—provides international guidelines and standards for the design, implementation and assessment of livestock interventions to assist people affected by humanitarian crises (Sphere Association 2018). However, LEGS focuses on livestock protection in less-developed countries and is not generally suitable for other disaster situations involving commercial farms, wildlife or companion animals.

The humanitarian imperative to ‘do no harm’ in an emergency context is often defined as ‘to avoid exposing people to additional risks through our actions’ (Charancle & Lucchi 2018, p.16). This definition is anthropomorphic and fails to consider the needs and sentience of animals. Bekoff and Pierce (2016) link the axiom of ‘do no harm’ to animal sentience and argued the ‘need to shift from welfarism to a more compassionate moral framework’ (p.3). However, no literature could be found that applied the ‘do no harm’ axiom to the context of animal disaster management. In contrast to the lessons learnt in the humanitarian space, the animal disaster management space lacks any equivalent code of conduct nor similar principles at a global level. To provide some context, the do-no-harm approach includes 4 categories namely: negative effects on the rights of beneficiaries, negative effects on the function of communities and relationships between local and national actors, negative effects on the local economy and livelihoods and the negative effects on the environment.

Examples of negative affects covered by the do-no-harm approach in the context of animal disaster response include:

- oversupply of imported milk powder as part of foreign aid decimating against the local dairy providers (J Thomas, personal communication, 2021)
- restocking of buffalo in Myanmar following Cyclone Nargis without adequate health checks leading to animal disease outbreaks and stock losses (Sawyer & Huertas 2018, p.7)
- providing temporary animal-only shelters using volunteers rather than animal owners taking responsibility that lead to animal stress, reduced enrichment and reinforced unscalable or sustainable approaches (Glasse & Anderson 2019) as well as taking away economic recovery opportunities from affected local businesses
- absolving responsibility from mandated organisations by undertaking their functions and leaving them less accountable (Glasse & Anderson 2019)
- creating dependency and expectation of future response that reduces community-led resilience
- providing response interventions that are not scalable and sustainable causing future vulnerabilities

- failing to document and share lessons from responses so that future responses can improve animal welfare outcomes (Glasse, King & Rodriguez Ferrer 2020)
- failing to reduce vulnerabilities to future disasters such as providing interventions that address a ‘weak animal health infrastructure’ as referred to by Heath and Linnabary (2015) as the root cause to animal disasters
- displacing local capacity with external resources leading to resentment and disempowerment
- delegitimising animal disaster response.

Delegitimisation of animal rescue

The delegitimisation of animal rescue can be defined as the:

Sub-optimal response by animal interest groups who respond to assist animals in emergencies or disasters in an unsafe or illegal manner, which consequently makes it more difficult for bona-fide emergency animal rescue groups to be accepted and used by authorities and the community in future interventions.

Aside from potentially putting human lives at risk, delegitimisation has negative effects for animal welfare through eroding trust between the animal response community and emergency services organisations. Ultimately, this loss of trust and confidence may lead to animal protection in disasters being considered a hinderance rather than an opportunity to improve human and animal safety. Studies have shown that humans do place themselves at risk for the needs of animals, such as breaching cordons to attend to their animals or failing to evacuate if they are unable to take their animals (Heath 1999; Heath *et al.* 2001; Irvine 2009; Glasse 2010, 2019; Glasse & Wilson 2011; Potts & Gadenne 2014; Taylor *et al.* 2015; Travers, Degeling & Rock 2017; Sawyer & Huertas 2018; Green 2019).

During the bushfires in Australia in the summer of 2019–20, the loss of 3 billion animals (World Wildlife Fund 2020) gained global attention, as well as responses from domestic and international animal interest groups. Such groups, formally or informally, identify as ‘animal rescue’, however, in the disaster response context, this is confusing and misleading to emergency service organisations. These groups use the term ‘animal rescue’ whereas it might be more appropriate if ‘animal care’, ‘welfare’ or ‘rehoming’ were used. The use of ‘animal rescue’ undermines the credibility of emergency services organisations that rescue animals and may regard the term ‘rescue’ as an embellishment of capability.

Although community resilience includes building community capacity and self-reliance, there needs to be a setting of standards for training and equipment to safeguard those working in and around disasters. Craig Fugate, former Administrator of the Federal Emergency Management Agency (FEMA), acknowledges the need for the emergency management sector to see and to value the public as being part of the solution and not the problem (Fugate 2019). Communities can and should be encouraged to create formal and semi-formal networks or response capability as part of developing disaster-resilient communities.

Unfortunately, the lack of animal-inclusive emergency management planning results in animal interest groups responding to disasters without appropriate authority, training or equipment as observed by Glassey and Anderson (2019) in the Nelson fires. Even animal interest groups that have a focus on animal disaster response have been found wanting, such as during the summer bushfires where promotional videos showed personnel working with flames and smoke around them (Humane Society of the United States 2020a) and also without basic protective equipment (Humane Society of the United States 2020b, 2020c). The wearing of flame-retardant apparel, safety boots, helmets, goggles and gloves is a rudimentary requirement for working on firegrounds as, even days and weeks after the fire has gone through, vegetation and underground fires are common and create a risk for personnel to step or fall into (KPTV Fox 12 Oregon 2020). The risk of branches and trees falling during and after fires remains a risk and requires helmets to be worn. The use of videos or pictures showing people from animal interest groups not adhering to basic safety requirements delegitimises animal rescue and reduces the level of confidence and trust in emergency services organisations.

Another aspect of delegitimation of animal rescue occurs where animal interest groups respond to an emergency and purport pre-existing animal-welfare issues as being caused by or related to the event. This could include taking footage of stray animals in a damaged city and suggesting the animal was in need of rescue when it was, at that time and prior to the disaster, a stray animal, or showing dogs without kennels or being chained up following floods when the dogs were in these conditions prior to the flood. The flooding exposed these vulnerabilities but was not the cause of animal welfare issues. It is argued that prevention is better than post-event response and animal interest groups wanting to reduce animal vulnerability to disasters could focus efforts on mitigation and strengthening weak animal health infrastructure to make a sustainable impact on improving animal welfare.

Legitimising animal rescue

Despite the many observations of delegitimation, there are also examples of activities that have legitimised animal disaster management activities including rescue. It is reasonable to assume that these activities strengthen public confidence and build trust and credibility with emergency services organisations. This enables animal disaster response organisations to be deployed and undertake safe and competent animal rescue, which results in improved animal welfare outcomes and community safety. Before a response phase, a number of legitimising actions can be taken, for example:

- working with emergency services managers to be listed as a formal partner in emergency management plans (McCarthy & Taylor 2018) as done by South Australian Veterinary Emergency Management
- improving rescue standards such as seen in the USA with the addition of NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents (National Fire Protection Association 2014)

- developing and appointing incident management tactical (United Kingdom) and technical advisers (New South Wales) for animal and wildlife rescue
- classification of response assets (teams, equipment and training) also known as resource typing for animal rescue as developed by FEMA (Green 2019, p.171)
- ensuring all animal disaster responders are trained in and apply the locally prescribed incident command system (Sawyer & Huertas 2018, p.44; Green 2019, p.13).

In effect, legitimisation of animal rescue includes adopting and using the same terminology, training and systems as the human rescue framework where possible. This builds recognition and confidence in emergency services organisations, which gives authority to effect animal rescue and delivers associated improved animal welfare outcomes.

The actions of emergency services personnel helping animals during disasters are often met with overwhelming public interest and support. There is increased acceptance that where there is no direct risk to human life rescue efforts should include animals. In the USA, it is common for FEMA urban search and rescue task forces to bring out companion animals from disaster-struck areas, and they are funded for such tasks (Fugate 2019). While the USA has learnt through catastrophic events such as Hurricane Harvey and has put in place federal law (*Pet Emergency Transportation and Standards Act*) to allow companion and service animals to be rescued during disaster, the same cannot be said for other countries. In Australia and New Zealand, emergency services organisations often use images of their personnel saving animals in their publicity that appears to legitimise animal rescue. However, such commendable actions do not reflect that the organisation has little to no responsibility for animal rescue. Often, other government entities are responsible but are under resourced and not integrated sufficiently to provide timely responses (M Taylor, personal communication, 2021).

Good practice emergency management extends to the post-incident actions of response agencies including debriefing, after-action reporting and corrective action planning, which form part of a lessons management process. However, there is little obligation to debrief nor to produce after-action reports. Where reports are written, they are usually not shared or are centrally located, which means those lessons are lost (Glassey 2011). The lack of after-action reporting means the lessons from one event may not prevent future negative consequences. In a comparative analysis of the 2017 Edgumbe flood and 2018 Nelson fires by Glassey, King and Rodriguez Ferrer (2020), only 7 per cent of lessons identified were indeed learnt from one event to the next. As a result, the Global Animal Disaster Management Conference plans to establish the Global Lessons from Animals in Disasters Information System (GLADIS) to allow after-action reports to be shared online and internationally.

Recommendations

This paper explored the concept of ‘do no harm’ in the animal disaster management context. This highlights the potential

divide between this evolving discipline and the humanitarian and disaster management frameworks. To improve integration and acceptability, it is recommended the legitimisation of animal rescue be reinforced. More work is needed to mainstream animal disaster management within existing arrangements where possible, rather than create new or duplicate systems:

1. Traditionally human-centric emergency management entities such as fire and rescue services be encouraged to lead and coordinate animal rescue as a core function, with the support of agricultural, wildlife, veterinary and animal interest groups. This could lead to entities such as the Australasian Fire and Emergency Service Authorities Council creating an Animal Disaster Management Working Group to build interoperable response capacities, and having the United Nations International Search and Rescue Advisory Group consider technical animal rescue within the team typing and search marking systems (Glasse & Thompson 2020). The function of animal disaster rescue is an operational role and should be coordinated by those managing the operations of the event to permit coordination, improve response efficiency, reduce duplication of effort and use credentialled animal disaster responders as a force multiplier to human-centric rescue capacities (Glasse & Thompson 2020).
2. The Code of Conduct (IFRC 2020) should be revised to be inclusive of animal disaster response organisations and recognise the importance of animals to communities. This would be consistent to their progressive efforts in pushing animal welfare as a core component of humanitarian and development actions (Sawyer & Huertas 2018, p.29). Animal interest groups should be signatories to a revised animal-inclusive code of conduct.
3. Creating a global framework for accountability across animal disaster response including animal interest groups and government. A global index could be developed with animal disaster management metrics to allow for useful comparison of country performance in this area. This comparative tool could be similar to that of the World Animal Protection Animal Protection Index and state-level assessments carried out by the American Society for the Prevention of Cruelty to Animals 'National Capabilities for Animal Response in Emergencies' program (Spain *et al.* 2017).
4. Animal interest groups working in disaster response should actively pursue mainstream emergency management training and qualifications such as incident management, bushfire safety, flood safety, urban search and rescue awareness and first aid. Additionally, legitimacy could be evident with professional qualifications such as the Certified Emergency Manager (CEM®) and graduate qualifications in emergency management rather than relying on animal or veterinary qualifications that seldom have disaster management syllabus or recognition.
5. Awareness within the animal disaster response sector needs to be raised of the concept of 'do no harm' and how actions may unintentionally lead to negative animal welfare outcomes and that actions need to be evidence-based.

Limitations and further research

The challenge of managing international and self-deploying animal response organisations has been highlighted from recent events such as bushfires in Australia and the massive explosion in Beirut. Although studies have shown that international disaster rescue deployments are characterised by limited outcomes in terms of (human) lives saved (Bartolucci, Walter & Redmond 2019; Rom & Kelman 2020) the effectiveness of international animal disaster response is less known and warrants research.

Conclusion

To date, the literature has positioned 'do no harm' as a principle of humanitarian action, however, that should be widened to include the emerging discipline of animal disaster management. There is an increasing body of research that shows that well-intended responses by animal interest groups may create unintended negative outcomes for animal welfare in the long-term through the delegitimisation of animal rescue. Where such groups lose legitimacy is through a lack of competency, equipment and authority and they also lose access to assist affected animals. If animal disaster management was recognised within the public safety sector, significant work is required to integrate this within traditional human-centric response systems. The success of this collaboration to create animal-inclusive resilient communities requires the public safety sector to encourage genuine engagement and collaboration with animal interest groups.

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Article

Legal Complexities of Entry, Rescue, Seizure and Disposal of Disaster-Affected Companion Animals in New Zealand

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Simple Summary: Companion animals are increasingly seen as a valued member of the family unit, and when disaster strikes their guardians often act protectively of them even at the risk to human safety. This behaviour has been observed in numerous disasters and as a result of Hurricane Katrina in 2005, the United States passed specific federal law to protect companion and service animals in a bid to acknowledge that in doing so it would also benefit the wellbeing and safety of its citizens. This article explores the effectiveness of current legislative arrangements in New Zealand with a focus on powers to seize and dispose of companion animals during and following an emergency, as well as other legal considerations for public safety. Though specific to New Zealand, the recommendations provide generic considerations that may enhance the legislative frameworks in other countries to improve both animal and human safety and wellbeing.

Abstract: With the increasing societal expectation that animals are afforded greater protection in emergencies, the legal process from entering a property to rescuing a companion animal, through to how to dispose of such animals if they remain unclaimed has not been well examined in New Zealand. It is hypothesised that the legal framework for such a response is flawed. In this study, each phase of animal disaster rescue is evaluated against four key statutes that may apply in each phase, in that does any statute provide clear end-to-end provisions with clear legal authority to do so? The study found that all statutes evaluated contained flaws and that the current legal provisions are insufficient to provide clear authority for the sequential process of undertaking the rescue of animals during emergencies. A major flaw was discovered in the Civil Defence Emergency Management Act 2002, a key statute, that provided for the seizure of property and animals but omitted a procedure for the disposal of such seized things leaving them all in legal limbo. It is recommended that animal disaster laws be updated to be more animal inclusive. The method also may be applicable to assist evaluating animal disaster management legal frameworks in other countries.

Keywords: animal; disaster; emergency; law; rescue; welfare; seizure; disposal

1. Introduction

The current animal disaster legal framework in New Zealand is based primarily upon the Animal Welfare Act 1999 and Civil Defence Emergency Management Act 2002. Both of these were written prior to Hurricane Katrina (2005) which was the genesis for modern animal disaster law with legislation being swiftly passed due to lessons identified, such as the Pets Evacuation and Transportation Standards (PETS) Act 2006 [1]. According to the Fritz Institute [2], 44% of those who chose not to evacuate during this catastrophic event did so in part because they were unable to take their pets as the federal policy was to leave pets (companion animals) behind at that time. Now in the USA, the PETS Act 2006 requires federal, state and local plans to include animal rescue, evacuation, sheltering and care.

Closer to New Zealand, following the 2009 Black Saturday bushfires in Victoria, Australia, the Royal Commission looking into this disaster found that human lives were lost as a direct result of animals not being able to be evacuated and pet owners returning prematurely to their properties to save their animals [3]. Significantly, the Royal Commission also recognised animal suffering and loss as inherently undesirable outcomes in disasters (A. Best, personal communication, 2020). A crucial development that came from this inquiry was the introduction of the Victorian Emergency Animal Welfare Plan, which has been described as the most robust instrument of its kind in Australia (A. Best, personal communication, 2020). According to White, “neither animal welfare law nor emergency management law address the management of the welfare of companion animals in disaster situations (in Australia) in any comprehensive way” and that “the interests of companion animals continue to be inadequately addressed” [4]. The lack of equivalent animal-specific disaster management legislation was also observed by Taylor et al. [5].

1.1. Animal Welfare Emergency Management Framework

The Civil Defence and Emergency Management Act (CDEMA) 2002 yielded a robust and forward thinking piece of legislation that has served the country well for most part given its grounding in comprehensive emergency management that covers the phases of risk reduction, readiness, response and recovery [6]. The CDEMA provides high-level responsibilities, powers and functions. It also allows for the creation of regulations and orders, including the National CDEM Plan Order that provides detail on national coordination arrangements. Such Orders are made as a schedule to an Order in Council. A “Guide to the National Civil Defence Emergency Management Plan” is also published to accompany the NCDEM Plan in a less legalistic format that also has supplementary information for users to enable the intent of the plan to be achieved.

The first National Civil Defence Emergency Management (NCDEM) Plan Order (herein the NCDEM Plan), was introduced in 2005 under the CDEMA and included an animal welfare section, with local authorities recognised as providing the animal welfare function for civil defence locally. The 2005 NCDEM Plan also stated that the Ministry of Agriculture and Forestry (later becoming the Ministry for Primary Industries) was only responsible for a national level reporting capability to government (cl. 48(1)).

The current NCDEM Plan was introduced in 2015 and continued to make provisions for animal welfare, but the key change was that it placed responsibility on the Ministry for Primary Industries (MPI) to nationally and regionally “coordinate” animal welfare emergency management also. The role of local authorities in animal welfare emergency management was also diminished and the core tenets of the PETS Act had not been replicated in New Zealand law despite the experiences of 2005 (Hurricane Katrina USA), 2009 (Victorian Bushfires) or the 2010–2011 Canterbury NZ earthquakes. Seventeen years after the first NCDEM Plan, there still is no national animal emergency management plan and only a small handful of group-level animal emergency management plans exist [7].

Although the lead agency (MPI) was mandated to have an emergency management plan for its responsibilities and to take all necessary steps to ensure those functions are provided (s. 59, CDEMA), no such national plan exists with such related work being dropped in favour of developing a “strategy”, that also remains unpublished.

Since 2009, state-level animal welfare emergency plans have also been developed across Australia, including in New South Wales, Western Australia and South Australia, for pets, livestock and wildlife [8]. It would appear that New Zealand is not keeping pace with best practice for animal emergency planning within Australasia.

In addition to the CDEMA, New Zealand has other legislation that contributes to the framework that affects animal welfare emergency management. This includes the Animal Welfare Act 1999 (AWA), the Dog Control Act 1996 (DCA) and the recent Fire and Emergency New Zealand Act 2017 (FENZA). None of these statutes were developed with specific regard to animal welfare in disaster situations.

In the Animal Evac New Zealand (AENZ) report, presented to Parliament in 2019 the deficiencies in law were identified with recommendations for improvement provided [9]. These deficiencies included the legal practicalities of carrying out animal disaster rescue, from entering onto private property to how rescue animals could be rehomed if not claimed (Table 1) and colour coded each statute versus phase for legal effectiveness for the circumstance and context of animal disaster response, with red being ineffective, orange being of limited effectiveness and green being effective.

Reference to the American Bar Association's (ABA) "Model Act Governing Standards for the Care and Disposition of Disaster Animals (2/10)" [10] is made in the matrix (Table 1) also.

The legal phases of animal disaster rescue in the matrix (Table 1) were summarised as follows:

1. Power to enter property
2. Power to enter dwellings
3. Power to rescue
4. Notification of entry or seizure
5. Disposal of animals rescued

Table 1. Legal phases of animal disaster rescue (revised) [9].

Acts	Power Bestowed upon	Power to Enter onto Property	Power to Enter Dwelling	Power to Rescue Animals	Notice of Entry Required	Disposal of Animals Rescued	Disposal of Animals Presented	Disposal Meets ABA Model Law (30-Day Hold)
CDEMA 2002	Controller or any Constable	Conditional to declared state of emergency only [s.87]	Conditional to declared state of emergency only [s.87]	Yes [s.92]	No	No provisions for things seized	No provisions	No
AWA 1999	Animal Welfare Inspector, including Any Constable	Yes, power to inspect any animal. [s.127]	No, unless Search Warrant issued. [s.127(3)]	Yes [s.127(5)(b/c)]	Yes [s.129]	Where taken into possession, by court order if not returned. [s.127(6)]	After 7 days excluding stock [s.141]	No
DCA 1996	Dog Control Officer or Ranger, or any constable	Conditional to situations involving dogs [s.15(1)(c)]	No, unless Search Warrant issued.	If limited access to food, water or shelter [s.15(1)(c)]	Yes [s.15(3)]	After 7 days from notice being issued to owner [s.71A]	Dogs only after 7 days [s.69]	No
FENZA 2017	Authorised person under Act	Yes, to protect life or property [s.42]	Yes, to protect life or property [s.42]	Yes, implied by Act. [s.40(b)]	No	No provisions but may transfer to AO/TLA as not seized.	No Provisions	No

1.2. Evacuation Prior to Animal Disaster Rescue

Prior to or during the animal disaster rescue phases, evacuations may occur. These evacuations may be self-initiated by property occupants, or such occupants may be instructed to evacuate voluntarily or under order. An evacuation order is mandatory and can be given by a controller or constable under s.86 of the CDEMA. However, the current Act has human-centric wording leaving animals unprotected.

Section 86 requires evacuations to be necessary for the preservation of “human life” and only provides for the exclusion of “persons” and “vehicles”.

The inconsistent use of “life” and “human life” within the CDEMA creates challenges as the interpretation of “life” may extend to animals, whereas “human life” is very specific. It is assumed “life” refers to all life, but without clear definition within the Act, it remains ambiguous and open to interpretation. These discrepancies were raised as issues with government in 2010 (and 2019) and despite recent amendments to the CDEMA in 2016, these and other animal emergency management issues continue to be ignored.

The refusal of public safety officials to allow companion animals to be evacuated alongside their human families is a leading cause of evacuation failure [2,11–13]. The omission of animals in section 86 of the CDEMA may also imply that animals cannot be excluded from a premise or place.

The NCDEM Plan does have animal inclusive principles pertaining to evacuation planning and operations (cl.140(d)) but fails to recognise animals may require mass evacuation under clause 138 (mass evacuations), and not in the CDEMA. The NCDEM Plan requires that the primary responsibility for the welfare of animals lies with the owners or person in charge of the animals (cl.140(d)(i)); that evacuation of companion animals and disability assist dogs, occurs alongside people (cl.140(d)(ii)); and the evacuation of production and other non-companion animals is the responsibility of the owner or person in charge of the animals (cl.140(d)(iii)).

The NCDEM Plan also requires that evacuation planning is collaborative involving all stakeholders and includes where possible, consultation with affected communities (cl.140(c)). It would appear from recent events such as the Edgecumbe Flood (2017) and Nelson Fires (2019), that companion animals have not been consistently evacuated alongside people, and that evacuation plans involving animal welfare stakeholders or the community had not been developed as expected [7], highlighting that the NCDEM Plan may not be creating the effects intended.

2. Materials and Methods

Each legal phase of animal disaster rescue was evaluated for effectiveness against the four key statutes affecting animal welfare emergency management, those being the CDEM Act 2002, Animal Welfare Act 1999, Dog Control Act 1996 and the Fire and Emergency New Zealand Act 2017. The question was: did the statute provide clear lawful authority for each animal disaster rescue phase? This study goes beyond the cursory evaluation as provided in the 2019 Animal Evacuation New Zealand (AENZ) report [9], to provide more detailed legal commentary. In effect, this study attempts to provide a chronological walk-through of a typical response requiring public safety responders to search for and rescue companion animals during and following a declared state of emergency, and the management of rescued or displaced animals where no owner has come forward.

This study excludes disaster-related issues observed relating to the protection of disability assistance dogs; rental accommodation shortages following disasters; complexities of animal registration and microchipping databases; ethical requirements to protect animals involved in research; animal control jurisdictions during response; management of deceased companion animals; or whether the existing lead agency is appropriate to lead the animal welfare emergency management function. These issues are primarily discussed in the AENZ report [9]; however, they will benefit from further research.

3. Results

3.1. Power to Enter on to Property

Under the Animal Welfare Act 1999 (AWA), an Animal Welfare Inspector (which includes a constable, herein Inspector) may enter a property to inspect an animal under section 127. An authorised person under section 42 of the Fire and Emergency New Zealand Act 2017 (FENZA) may also enter a property to protect life and property. The argument whether animals are “life” or “property” are not

considered in this study, but “life” is assumed to include animal life. The Dog Control Act 1996 (DCA) allows Dog Control Officers to enter property to check the conditions of dogs under section 15(1)(c); however, Dog Control Officers do not have the power to enter a property to check on other species of animals which is limiting in an emergency situation. In most cases, Dog Control Officers are employees or contractors to the local authority. Under the Local Government Act 2002 (LGA), such officers may also have powers under s.173 to enter occupied land or buildings in a sudden emergency that is causing or is likely to cause loss of life or damage to property. Finally, the CDEMA allows a constable or any person authorised by a controller to enter a property, but only during a declared state of emergency (s.66 or s.68) meaning no such powers are available in the lead-up to a declaration which often is hours after the onset of sudden emergencies. In this animal disaster rescue phase, it appears that only the AWA and FENZA provide clear and existing powers to enter onto a property regardless of species at risk or whether there is a state of emergency declared or not.

3.2. Power to Enter a Dwelling

After making entry on to a property during an emergency, it is a common requirement for animal disaster rescuers to enter dwellings to ensure animals have not been left behind. The legal definition of a dwelling during an emergency is also open to interpretation as can a house be occupied as a dwelling if it is subject to mandatory evacuation, and is it still a dwelling where it is so damaged that it is unable to be habited? These two questions require further legal analysis; however, for the purposes of this study, we assumed that, under a conservative approach, dwellings retain their legal status regardless of the circumstance. This is important as a dwelling is often sacrosanct under law to protect the rights of occupants and it should be noted dwellings can include any building or structure for human habitation and may include motorhomes and tents. Both the AWA and DCA require the person exercising powers of entry to have a search warrant (subpart 3, Search and Surveillance Act 2012) to enter a dwelling, even in a disaster as the CDEMA does not affect the powers, functions or duties of other acts (s.6). It is not practical for emergencies involving multiple dwellings to seek a search warrant for each property making both Acts ineffective in animal disaster rescue. The CDEMA, however, does provide the power to enter properties and buildings (s.87), as it does not mention any special caveats for dwellings, but such power to enter any building regardless of its purpose (such as being used for human habitation) is only available during a declared state of emergency. Whether a state of emergency is in effect or not, those authorised under the FENZA may enter any land, building or structure (s.42(2)(a)); may use force to do so (s.42(2)(b)); and, such authorised persons are protected from liability in doing so (s.161). Similar protections for reasonable forced entry and other damages are made under the AWA (s.158), DCA (s.74) and CDEMA (s.110). It should also be noted that *marae* (indigenous land that is afforded special government status) has the same protections as a dwelling under the AWA, meaning that entry on to this land and any of its buildings by an inspector or constable requires a search warrant. In this animal disaster rescue phase, it would appear only the FENZA provides clear and existing authority to rescue animals from dwellings regardless of a state of emergency being declared.

3.3. Power to Rescue

The rescue of animals is important to human safety. The academic consensus that in an emergency, saving animals in effect saves human lives, is a fundamental philosophy to contemporary emergency management doctrine. In New Zealand, there have been frequent examples of people losing their lives in an attempt to rescue their companion animals [14,15] and similar occurrences are common overseas too. In 2017, a woman who was refused entry to the cordoned off township of Edgecumbe following flooding while trying to get to her horse, defied the cordon and secretly swam across the flooded river to successfully get her horse to safety [9].

During the animal disaster rescue phase of having already entered a property including a dwelling, when an animal is located and it is in need of being rescued, most of the statues being evaluated provide

for such powers. The CDEMA provides for persons under the direction of a controller or constable to seize things, including animals to limit the extent of the emergency (s.92). An Inspector (including a constable) may take an animal into possession where they believe it to be at risk from imminent harm (s.127(5)(c)). The CDEMA also provides for the rescue of people (s.85(1)(b)), but not animals.

Under the FENZA, it is assumed under s.40(b) that an animal may be rescued as part of taking “whatever action is necessary to save lives and property in danger”. The assumption that animal rescue is within the scope of an authorised person under the act is reflected in the statutory additional assistance function of FENZ to perform rescues involving animals (s.12(3)).

The only statute that is not effective in this phase is the DCA which is limited to situations involving dogs, and that only where dogs have limited access to food, water or shelter may they be seized (s.15(1)(c)). This means under the DCA, where a dog is found on a property in need of evacuation (and consent of the owner is not available), and that dog already has food, water and shelter, it may be considered unlawful for the dog to be seized. It could be argued that if a property is about to become flooded or the area is evacuated and persons are not permitted to enter, that this creates a situation where the dog will have limited access to food or water and therefore provides grounds for seizure (s.15(1)(c)). If a dog is in a public space or on private property where such property owners give consent, the dog can be impounded by a dog control officer. In situations where dogs are roaming off their property during an emergency, there are provisions for seizing (impounding) the dog under the DCA. The effectiveness of the DCA to seize dogs for the purpose of protecting them during an emergency is heavily influenced by situational factors. On this basis, the DCA is not effective in providing adequate protection for dogs in emergencies.

3.4. Power to Requisition to Assistant Animal Rescue

To carry out activities for the preservation of human life under the CDEMA, such as rescue activities, the Act provides for the requisitioning of equipment (s.90). This could include the requisitioning of boats to rescue people, but the Act unfortunately is inconsistent through its sections with some powers specific to preservation of “life” and others “human life”. By limiting emergency powers such as requisitioning to only “human life”, rather than having powers to requisition to preserve “life” that would then include animals, the Act in its current form may inadvertently put human life at risk.

For mass animal rescues during disasters such as those from intensive farming facilities and laboratories, specialist equipment and heavy machinery may be needed. The inability of public safety officials to be able to carry out specialist or logistically complex animal rescue operations may force some to defy official advice and put themselves in harm’s way as seen in numerous events such as the 1996 Weyauwega train derailment [11], Buckeye Farm disaster in 2000 [11], Fukushima nuclear incident in 2011 [16] and the Edgcumbe Flood in 2017 [9].

3.5. Notice of Entry or Seizure

Where statutes are focused on law enforcement such as the AWA and DCA, rather than public safety such as the CDEMA and FENZA, there are requirements for inspectors, constables and dog control officers to leave a notice of entry, and where things are seized, further written record of what was taken from the property or person. Such requirements are part of ensuring checks and balances are in effect when enforcement powers are being exercised.

However, in an emergency situation and especially those situations where multiple properties require entry, the issuing of such notices may not be practical. For example, following the evacuation of the township of Edgcumbe in 2017 following a major flood as a result of a sudden flood bank protection failure [17], over 600 properties were required to be searched for abandoned animals. This became the largest companion animal rescue operation in New Zealand’s history and if a physical notice had to be issued to each property this would have been problematic as there were not enough notices (as prescribed in s.129) available; the writing up on a notice for each property would have delayed the rescue operation; and, the use of the prescribed forms on paper were not compatible

for use in flood conditions. Powers to enter property, dwellings and seize were provided for under delegation by the CDEMA for this event.

In most day to day cases where inspectors or dog control officers need to leave a notice of entry under their respective statutes, this is done usually by affixing the notice to the front door of the dwelling or being placed in the letterbox. In overseas events, floods have been so high that only rooftops are exposed leaving this the only place to affix a notice of entry which is somewhat not useful once property owners return after floodwaters recede. In other disasters, such as earthquakes, structures may be left in ruins, again leaving the requirement to affix legal notices an issue. Though not compliant with the requirement of s.129 of the AWA, it is common for rescue teams, both human and animal, to mark properties searched with disaster search markings (often with spray paint) that may indicate how many people or animals have been rescued, alive or deceased [18] and the CDEMA provides for the power to affix such markings (s.92) and without liability for damage in doing so (s.110).

Where entry and removal of animals is undertaken under the CDEMA or FENZA, no such notice of entry is required. The CDEMA continues to have limitations in that it only provides such powers during a state of emergency. The FENZA would appear to be the only statute providing clear and existing uncomplicated powers to rescue animals from properties during an emergency.

3.6. Disposal of Animals Rescued

Where animals have been rescued during an emergency under the AWA, CDEMA, DCA or FENZA, and the owner or person in charge has failed to reclaim them, the animals need to then be disposed of. The term “disposed of” is a legal term within the AWA and DCA and should not be assumed to mean the animal is destroyed. Under the AWA, disposal of animals could include selling, adoption, auction, sale, transfer (to another animal organisation) or euthanasia. Currently, in New Zealand, only the Royal New Zealand Society for the Prevention of Cruelty to Animals (SPCA) is an “approved organisation” under section 121 of the AWA. Approved Organisations have the powers to enforce the AWA and also receive and dispose of animals presented to it, such as those animals that are abandoned, lost or displaced.

Once an animal comes into the custody of the SPCA as an approved organisation under the AWA, the SPCA can re-home the animal or otherwise dispose of it after 7 days pursuant to section 141(1A) if the owner does not claim the animal, unless the animal is taken into possession by an inspector under section 127. The disposal provision under section 141(1A) is applicable where, for example, a member of the public delivers an animal they have found (in an emergency or not) into the custody of an approved organisation. Where an animal has been taken into possession by an inspector under section 127, unless the inspector returns the animal by agreement or surrendered by the owner (transferring ownership to the approved organisation), only the district court can order the disposal if it deems it appropriate after an application is made by the inspector (s.136A). This process can take months and, therefore, it creates a significant disadvantage of using the AWA in an emergency to rescue (take into possession) an animal, notwithstanding the complexity of notice of entry requirements.

The NCDEM Plan, however, places the local authority as the organisation responsible for accommodation of companion animals, yet they (and all other animal-related organisations in New Zealand other than the SPCA) do not have the legal authority to re-home unclaimed animals other than dogs (as local authority powers for disposal only extend to stray dogs found at large under the DCA) and they have no powers for holding or disposing of displaced companion animals such as cats, rabbits and birds.

A major flaw in the CDEMA is that it does not provide for the disposal of seized items except for destruction, which would have to be done while a state of emergency is still in effect. This means for animals seized under the CDEMA during a state of emergency, once the state of emergency has been lifted or expires, such animals have no legal process for their disposal if unclaimed. This creates the risk where if they animal is euthanised that no such authority exists, and where the animal is re-homed,

the lack of legal process for ownership transfer may lead to animal custody disputes as experienced after Hurricane Katrina.

After overseas experiences including Hurricane Katrina, the American Bar Association created a model act for states to adopt to address the ownership, temporary holding, transferring and disposal of animals during and following a disaster [10]. Their recommendation was that during a declared disaster, that the holding period was set at 30 days to allow for displaced owners to claim their animals; and that animals could not be transferred out of state without approval of the State Veterinarian [10]. Thousands of animals were evacuated and transported across the United States following Hurricane Katrina, never to be reunited with their original families again and this prompted legal reforms [19]. The model act also ensured that animals that were unable to be reunited could be legally re-homed with ownership being transferred.

Where animals have been rescued and removed from a property under FENZA, there is no legal procedure for the disposal of such animals that are unclaimed. Animals rescued under FENZA in such circumstances could be transferred to an approved organisation which assumes custody of it, and then after following requirements to return the animal to its owner, it could then be disposed of after seven days. This leaves only the provisions of disposal under section 141(1A) to give effect to re-homing (or otherwise) of unclaimed animals and this power only extends currently to the SPCA (as the only approved organisation under the AWA) which is not even responsible for the care, transport and accommodation of disaster-affected companion animals as specified in the NCDEM Plan.

4. Discussion

After consideration of the above factors, none of New Zealand's relevant statutory regimes provide a clear and effective end-to-end legal process for animal disaster rescue, from entry on to property to make a rescue, to the disposal of such animals that remain unclaimed. Unless otherwise specified, laws need to provide continuity of legal process, and in the context of this study, emergency responders have no clear or effective process to follow, creating risk for themselves and their organisations. The least complex process for animal disaster rescue was under the FENZA; however, this is based on some assumptions in that it is implied that animals can be removed from a property or dwelling as part of the authorised persons power to "take whatever action is necessary to save lives and property in danger" (s.40(b)), and the definition of lives extends to animal lives. FENZA is also limited as it has no disposal provisions where things are seized or taken into possession if that is the action chosen by the authorised person. This leaves an assumption that the disposal arrangements are reliant on the animal being delivered into the custody of an approved organisation and the default disposal provisions of section 141(1A) being applied where no owner claims the animal, acknowledging the seven-day requirement under the section is insufficient in the aftermath of a disaster according to the American Bar Association. It is clear that the animal disaster rescue laws in New Zealand are not fit for purpose and have significant limitations. Though there has been some criticism of the PETS Act 2006 being described as "no carrot and no stick" [1] and having some deficiencies [20,21], the passage of this law has been labelled as "effective" [22] and having positively influenced the culture within emergency management to afford greater protection to animals during and following disaster [1].

To address these limitations, several recommendations are offered.

Recommendations

1. Mandating within the National CDEM Plan:
 - a. The development, maintenance, resourcing and exercising of animal welfare emergency management plans, both at the national and regional level.
2. Amending the CDEMA to be more animal inclusive, by:

- a. Replacing reference to protective measures (part 5) from “human life” to “life” or replacing with “human and animal life” across the Act to ensure such measures can be applied to animals too.
 - b. That the term “animal” is included in the interpretation (s.4), with “animals” being defined as per the meaning given in s.2 of the AWA.
 - c. Amending the CDEMA to include a section on disposing of things seized, with special attention to animals including a 30-day holding period, transfer of ownership for unclaimed animals and for such provisions to continue once a state of emergency has been lifted.
 - d. Amending the CDEMA to specifically provide for emergency powers under section 85 to provide for the evacuation, rescue, transport, accommodation and essential needs of animals.
3. Amending the CDEMA to specifically provide the power clarify markings under section 92 to include the definition of “marking” as per the meaning given in the AWA (s.2) to cover implanting of animals with microchips.
 4. For the purposes of consolidation, consideration should be given to a specific act or regulation made under the CDEMA, such as that of the Pet Evacuation and Transportation Standards Act 2006 set in the United States that ensures planning, funding, public transportation and rescue capability emergency arrangements are in place for companion animals.
 5. The issues identified in the AENZ report [9] that have not been addressed in this study require further attention.

5. Conclusions

There is considerable evidence that substantiates the protective nature of humans towards animals, in particular companion animals. Well respected disaster management scholar Erik Auf der Heide stated that emergency planning should be based on “normal behaviour” not “correct behaviour” [23]: in effect we should plan on the basis on how humans will likely react, not how we want them to react. On this basis, emergency managers and law makers need to place greater focus on ensuring that animals, in particular companion animals are acknowledged as intrinsically linked to people. To achieve improved evacuation compliance and public confidence in response coordination, the welfare of animals during emergencies needs to be a core function and a priority of the response. To enable this change and designate accountability, New Zealand needs to heed the lessons of Hurricane Katrina, the Black Saturday Victorian bush fires and the Edgecumbe Floods, and give urgency to strengthening the animal emergency management laws with amendments to the relevant acts or the passage of specific regulations to reflect international best practice and meet the expectations of its citizens.

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A report on animal inclusive
emergency management law
reform.

By Steve Glassey MEmergMgt CertAWI CEM®

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Warning: Some images in this document may be disturbing to some viewers, as pictures of disaster related neglect of animals are used.

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Embargo

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Foreword by Gareth Hughes MP



Whakapūpūtia mai ō mānuka, kia kore ai e whati. Ki te kotahi te kakaho ka whati, Ki te kapuia e kore e whati — *Cluster the branches of the manuka so they will not break. Alone we can be broken. Standing together, we are invincible.*

When disaster strikes, the most important thing is keeping your loved ones safe. That's why emergency management planning is so important. We can stay safe by being prepared.

But there is a focus missing from our current emergency management arrangements, we don't have fit for purpose laws to protect animals who play an important part in our society and economy.

Can you imagine a disaster causing your family to be instructed to evacuate, only to be told to leave your pets behind? Or to flee to a shelter, only to have civil defence authorities tell you that there are no plans in place to help you care for your animals? Around the world there are countless examples where human and animal lives have been put at risk by ignoring animals in emergencies.

In this important report, Steve Glassey, proposes how we can modernise our existing emergency plans and laws to take account of animals in homes, farms and our communities.

This is not just an issue for animals, when separated from their animals, people will risk their own lives in animal rescue attempts. Steve reveals that in many disasters, including the earthquakes that devastated Christchurch, a common reason for people breaching cordons was to go rescue the furry members of their families. This makes the job of our emergency responders much harder.

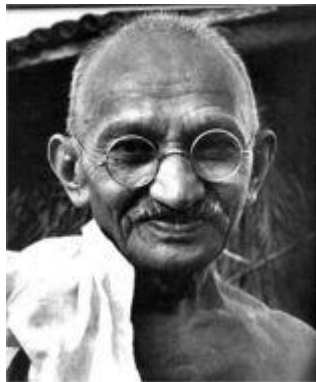
This can be avoided. But it takes planning and a modernisation of our laws. It takes our government stepping up to improve our animal emergency management arrangements and laws so that agencies take a more animal inclusive approach during disaster response. It will not only keep our animals safe, it will keep us safe, and it will improve our overall response when disaster strikes.

Steve has comprehensively researched the issue and put forward a number of practical recommendations to make sure our emergency laws and plans include all the members of our families. In the end, it'll make us all safer.

A handwritten signature in blue ink, appearing to read 'Gareth Hughes', written in a cursive style.

Gareth Hughes

Member of Parliament



“The greatness of a nation and its moral progress can be judged by the way its animals are treated.”

– Mahatma Gandhi

Introduction

In 2005, America was struck by Hurricane Katrina. The deadliest natural disaster in their history at that time. Over 1,800 people died in that disaster, millions of animals also perished. 44% of those who failed to evacuate did so in part because they could not take their pets [1]. At the time, government policy was to leave pets behind [2]. Within a year of this tragedy, the US government realising the intrinsic link between people and animals, passed the Pets Emergency & Transportation Standards Act 2006 [3]–[6].

New Zealand has made little effort to learn from the grave mistakes of the USA [7]–[9]. The US government mandated funding, planning and capability for animal disaster management. By contrast, New Zealand still does not mandate responsibility for animal emergency management plans, fails to provide for the reimbursement of response costs incurred by animal charities, and laws continue to fail to sufficiently recognise animals require protection in disasters. In 2010, I completed my Masters in Emergency Management and made recommendations to government including MPI and the Ministry of Civil Defence & Emergency Management (MCDEM), noting significant deficiencies in our arrangements to protect animals from disaster [8]. None of the 60 recommendations have been implemented.

Seven years later, the Edgecumbe Floods struck and over 1,000 animals were left behind in the town and the fire service wouldn't go back in because there were no people left in the town [9], [10]. Many animals died needlessly. If it wasn't for the massive efforts by the animal rescue volunteers, more would have died [11]. One story was that of a woman who wanted to return to rescue her horse was refused entry at the cordon. As a result, she swam across the flooded Rangitāiki river with some ropes to rescue her horses [11]. Simply put, saving animals in disasters saves human lives. Indeed, leading scholars in this area have stated **“Pet ownership is the single most common factor associated with human evacuation failure that can be positively affected when the threat of disaster is imminent”** [12]. Studies have also found that the psychological impact of pet loss can be just as traumatic as losing one's home or even another family member [13]–[16].

This paper is intended to assist the drafting of a private members bill for Gareth Hughes MP, to enhance New Zealand's animal welfare emergency management arrangements. This may require amendments to existing legislation such as the Animal Welfare Act 1999, Dog Control Act 1990, Residential Tenancies Act 1986, Human Rights Act 1993, Civil Defence Emergency Management Act 2002 (as well as associated Codes or Orders), and/or passage of new statutes.

Legend

To assist with the identification of changes/additions to the various statues and other legal instruments, recommendations as well as case studies have been colour coded as follows:

Dog Control Act 1996	Human Rights Act 1993
Animal Welfare Act 1999	Residential Tenancies Act 1984
Civil Defence Emergency Management Act 2002	National Civil Defence Emergency Management Plan Order 2015
Case study	

Lead Agency

The historic failures of MPI in coordinating animal welfare emergency management need to be considered given that animal welfare, let alone animal welfare emergency management is not a core function of the Ministry. This has been raised on numerous occasions as a result of MPI failing to meet basic requirements under the Coordinated Incident Management System (CIMS) and there may be low confidence in MPI to perform all of this function [9], [10]. It is recommended that MPI lead non-companion animal emergency management, however companion animal emergency management becoming a core welfare function within civil defence emergency management as the needs of companion animals and owners are intrinsically linked and an integrated approach for rescue, housing, psychosocial needs response. This would mean, the Ministry of Civil Defence and Emergency Management would be responsible for coordinating companion animal emergency management, the CDEM Group responsible for coordinating companion animal emergency management, supported by local authority animal control. This also ensures group level companion animal plans should be incorporated by referenced into the group emergency management plan. Fire & Emergency NZ assumes responsibility for coordinating companion animal rescue operations and companion animal decontamination to ensure an integrated approach. This does not prevent teams such as the SPCA National Rescue Unit or Massey University Veterinary Response Team from being deployed, however it ensures such and similar teams are coordinated effectively alongside any human or property protection response [10]. Simply put, more power and responsibility should be placed on local authorities for companion animal emergency management as they have more capacity in this area, and dog control registration could be amended to allow for such revenue to fund related activities (i.e. in Wellington City alone, a 5% increase in dog registration would net an additional >\$50,000 for animal emergency management (reduction and readiness only as response and recovery costs are covered under proposed changes in this document) and knowing this may help save their animal, ratepayers may find this palatable. There are also over 1,600 registered charities that benefit animals in New Zealand – it is important that an inclusive forum is used to engage as many players as possible to improve pre-incident preparedness and creating a clear understanding of roles and responsibilities. In the US, there is the National Alliance of State Animal and Agricultural Emergency Programs (NASAAEP) which is comprised of government, not for profit, and private organisations. This inclusive model is lacking in New Zealand.

Amendment to the National Civil Defence Emergency Management Plan Order 2015

s.46 Role of fire service during response and recovery

Add: Fire & Emergency New Zealand is responsible for the coordination of search/rescue and decontamination activities relating to companion animals during a major incident or state of emergency, with the support of Approved Organisations, other such organisations included in s.75 (Animal Welfare) of the National Civil Defence Emergency Management Plan Order or as specified in CDEM Group Plans or FENZ local plans. Nothing in this plan, requires Fire & Emergency New Zealand to deliver animal related search, rescue or decontamination services.

S.75 Animal Welfare

Add: At the national, the Ministry of Civil Defence & Emergency Management is responsible for -

(d) facilitating inclusive collaboration across companion animal welfare interest groups to enhance companion animal welfare arrangements through periodic hui, forums, workshops, conferences, and meetings.

(e) leading the development, implementation and review of a companion animal emergency management plan as part of the national civil defence emergency management plan in consultation with the *search and rescue* and *welfare services clusters* (s.33, National Civil Defence Emergency Management Plan order 2015).

At the national, CDEM Group and local level, the Ministry for Primary Industries is responsible for - coordinating and developing plans for non-companion animals.

Amendment to the Dog Control Act 1996

s.37(4) Local authority to set fees

Amend: In prescribing fees under this section, the territorial authority shall have regard to the relative costs of the registration and control of dogs in the various categories described in paragraphs (a) to (e) of subsection (2), *obligations under the National Civil Defence Emergency Management Plan Order (excluding response and recovery costs)*; and such other matters as the territorial authority considers relevant.

Mandatory Planning

Nothing in the Civil Defence Emergency Management Act 2002 gives authority to set animal welfare emergency plans (M. Nixon, personal communication, 2018). The National Civil Defence Emergency Management Plan Order 2015, however tasks MPI to *coordinate* animal welfare planning, but no one is accountable for such a plan – there is also no ‘stick’ if this is not done either (nor is there any ‘carrot’). This is not consistent with lessons from international experiences such as those from Hurricane Katrina [8], [9], [17], [18] or the Victorian Bush Fires [19]. The *Ministerial Review of Civil Defence*, also recommended the term “major incident” to be included in future emergencies for significant events that fall below the threshold for declaring a state of emergency. Such plans need to be “incorporated by reference” pursuant to sections 41 (national level) and 51 (group/regional level) - so it would be an offence under section 95 to fail to comply with such plans.

Amendment to Civil Defence Emergency Management Act 2002

Add: In approving Civil Defence Emergency Management plans, the Director shall ensure that such plans take into account the needs of individuals with companion animals prior to, during, and following a major incident or state of emergency.

Amendment to the National Civil Defence Emergency Management Plan Order 2015

Add: That Civil Defence Emergency Management Group is responsible and accountable for the development, approval and maintenance of emergency management plans in reach region for the protection of companion animals prior to, during, and following a major incident or state of emergency. Such a plan shall be compatible with regional animal emergency management plan covering non-companion animals, which MPI is responsible for developing for each CDEM Group.

That MPI is responsible for the development and maintenance of a National Non-Companion Animal Welfare Emergency Management Plan. The Minister for Primary Industries on the advice of NAWAC and Director of Civil Defence, is responsible for approving the National Non-Companion Animal Welfare Emergency Management Plan.



Source: Daily Mail UK (2009). "Sam" the Koala Bear was injured by the 2009 Victoria Bushfires. He was rescued by David Tree, a firefighter. Sam became a symbol of hope and human kindness.



Definitions

Companion animal and disability assist dog.

Amendment to the Civil Defence Emergency Management Act 2002

Section 2: Interpretation

Add:

companion animals are domesticated or domestic-bred animals whose physical, emotional, behavioural and social needs can be readily met as companions in the home, or in close daily relationship with humans, and includes cats, dogs (including disability assist dogs), rodents, reptiles, fish, horses, and birds; but not does include pigs, sheep, emu, ostrich, or cows. (Adapted from the ASPCA definition [20])

Animal an animal having the same meaning pursuant to the Animal Welfare Act 1999.

Animal marking having the same meaning as marking in the Animal Welfare Act 1999.

Major Incident – refer to Ministerial Review recommendations.

Operational Response Costs

Currently, central government under the National Civil Defence Emergency Management Plan Order 2015 reimburses local authorities 100% for emergency welfare costs, except for animal welfare despite it being a specified sub-function of the emergency welfare arrangements. Costs incurred by animal charities and other supporting organisations (i.e. veterinary practices) are not eligible for reimbursement by government. The direct cost of approximately \$6,000 by the SPCA's National Rescue Unit deploying to Edgcumbe and leading such a massive rescue operation was not even reimbursed. Without the goodwill of animal charities and other supporting organisations, government is unable to meet the expectations of citizens in animal emergency response. The PETS Act 2006 made funding available not just for response costs but also for preparedness activities within the US. Further guidance can be found within FEMA Policy DAP9523.19 [21]. Examples of specific funding for animal disaster response can be found in State Laws, such as those in Maine [22].

The unique relationship between animals and humans in New Zealand is intrinsic and is not merely a property relationship. Animal organisations operate in the interests of public and human welfare and wellbeing. The Animal Welfare Act 1999 deals directly with the relationship between animals and their owners which is an indication that ensuring the welfare of an owned animal correlates directly to the welfare of its owner. The purpose of emergency defence management is to ensure that the welfare of citizens is maintained which must include providing for the welfare of animals (R. Stedman, personal communication, September 10, 2018).

Amendment to the National Civil Defence Emergency Management Plan Order 2015

S. 162 Government financial support to local authorities during response

Government financial support for response activities focuses on costs incurred by local authorities to— care for directly affected companion animals, including the costs of accommodating, transporting, registering, animal marking, rescuing, feeding, preventative immunization, disease testing, decontamination, disposal, and emergency veterinary treatment to companion animals as a result of an emergency; and recommissioning, cleaning and disinfection of facilities and other resources used for such emergency response purposes.

This amendment would also need to be adapted for s.163 Government financial support to local authorities during recovery.

Volunteer Training

For over three years now, civil defence volunteers have been able to access zero fee training through TEC ACE funding. However, this has not been extended to those in civil defence animal welfare roles which adds further *salt to injury* given that civil defence animal welfare response costs borne by animal charities are not eligible for reimbursement by government, yet civil defence human welfare services are able to be reimbursed 100% (and access zero fee training for volunteers). Private Training Establishments who provide volunteer training have raised this concern for over three years with no traction from the Ministry of Civil Defence & Emergency Management. The national arrangements need to provide assurances that animal volunteers have equal access to such training, especially activities that enhance health and safety. This will improve responses to future emergencies, through physical capability, and also broader understanding of the human-animal bond that results in failure to evacuate.

Amendment to the National Civil Defence Emergency Management Plan Order 2015

S. 102 Capability development activities

Add: Volunteers from organisations who undertake an animal welfare emergency management function, through agreement with Fire & Emergency New Zealand, a Civil Defence Emergency Management Group, the Ministry for Primary Industries, or being mandated in the National Civil Defence Emergency Management Plan shall be afforded the same access to civil defence volunteer training as funded by government as those civil defence volunteers in a non-animal related function or role.



Christchurch Earthquake 2011: The situation for animals has been "deteriorating because of time issues" and is forcing concerned animal owners to break police cordons to search for their pets.

"That is really one of the common problems of why people break the cordon. It's not to go and do burglaries . . . it's to go and retrieve their pets." [23].

**Blair Hillyard, Rescue Officer
SPCA National Rescue Unit**

General Emergency Powers

The current Civil Defence Emergency Management Act 2002 does not have an animal inclusive structure to allow for rescue, care, shelter, and essential needs for companion animals. This provision also ensures public transport can be directed to take companion animals to improve evacuation compliance.

It is important to note that section 6 of the Civil Defence Emergency Management Act 2002, states that the act does not affect the powers, duties or functions of other acts. This includes not affecting the duties and powers that inspectors have under the Animal Welfare Act 1999, including the power to enter property (s.127), power to mitigate suffering including giving notice to animal owners or those in charge of such animals (s.130(1)(b)) and the power to take animals at risk of imminent harm into possession (s.127(5)(c)). Furthermore, the obstruction or hindering of an inspector (s.159) or failing to comply with requirements made by an inspector (s.130(2)) is an offence.

The Civil Defence Emergency Management Act 2002 has the purpose (s.3) to

- (a) improve and promote the sustainable management of hazards (as that term is defined in this Act) in a way that contributes to the social, economic, cultural, and environmental well-being and safety of the public and also to the protection of property; and,
- (c) provide for planning and preparation for emergencies and for response and recovery in the event of an emergency; and

As animals are legally considered as property, they should be afforded protection consistent to the act's purpose.

Amendment to the Civil Defence Emergency Management Act 2002

s.85 Emergency Powers

Civil Defence Emergency Management Groups may:

Add: Provide for the rescue, care, treatment, shelter, transport, and essential needs of animals, and carry out animal marking.

Evacuation

As per above. The current *principles* of evacuation as provided for in the National Civil Defence Emergency Management Plan (s.140). The vagueness of principles gives good reason for specific statute law for protection of animals as implemented in the US through the passage of the PETS Act 2006. Recommended amendments are based on US laws [24].

Amendment to the Civil Defence Emergency Management Act 2002

s.86 Evacuation

Change: evacuation requirements for preservation of "human or animal life".

Amendment to the National Civil Defence Emergency Management Plan Order 2015

s.140

Add: Principles (mass evacuation)

- (iv) Where companion animals are left behind in evacuation area, that efforts to rescue such animals and reunify them with their owners, shall be a priority to prevent the illegal return of owners to the evacuated area.
- (v) every effort must be made to keep disability assist dogs and their owners together in cases of emergency. Those who rely on disability assist dogs must be evacuated, transported, and sheltered together with their service animal. Facilities that provide shelter to people with disabilities are obligated to provide shelter to both the disabled person and the disability assistance dog.



"No more should you ever hear evacuate and leave your animals behind. You got a plan for it. And if you go through our preparedness information, you're going to find, we made that a big deal. You got pets, they're in the family plan. If you evacuate, take your pets with you" [25]

Craig Fugate, FEMA Administrator

Entry onto premises

As per above.

Amendment to the Civil Defence Emergency Management Act 2002

s.87 Entry onto premises

(a) saving life, preventing injury, or rescuing and removing injured or endangered persons or *animals*; or

(b) permitting or facilitating the carrying out of any urgent measure for the relief of suffering or distress to people or *animals*.

Amendment to the Animal Welfare Act 1999

s.127(3) Dwelling: No inspector may, under subsection (1), enter in or on any dwelling or marae unless he or she is authorised to do so by a search warrant issued under section 131.

Add (3)(a) A dwelling may be entered without a search warrant for civil defence purposes, when during a state of emergency that property has been subject to direction to evacuate by a controller or constable.



Source: Steve Apps, *The Post-Crescent*, Appleton: Weyauwega, Wisconsin.

In 1996, a dangerous goods train derailed and forced the evacuation of the entire township of Weyauwega (above). About half the households left their pets behind. Half the owners attempted to breach the cordon to rescue their pets, and only after a bomb threat was made to the emergency operations centre, the state governor became involved and ordered the National Guard with armoured personnel carriers to effect an animal rescue [6], [26].

Requisitioning powers

As above

Amendment to Civil Defence Emergency Management Act 2002

Section 91 Requisitioning Powers

Change: This section applies if a state of emergency is in force and, in the opinion of a Controller or a constable, the action authorised by this section is necessary for the preservation of human and *animal* life.

Microchip Databases

Currently, there are two national databases for microchip records in NZ. The NZ Companion Animal Register (owned by the NZ Companion Animal Trust) and the National Dog Database operated by the Department of Internal Affairs, the later established under the Dog Control Act. However, despite lobbying by the NZCAR and the Institute of Animal Control Officers NZ, DIA has refused to allow the sharing of information between these systems which results in delays in reuniting and duplication of services. These databases need to be able to share information in the interest of animal welfare and improve government electronic services to citizens. The rapid and effective -reuniting of animals with their owners, in particular disability assist dogs is critical to preventing owners returning to disaster affected areas and minimising negative psycho-social impacts on people.

There has also been concern raised by animal welfare and care professionals, that it is common that they observe cases where companion animals (but not dogs due to mandatory registration) have been microchipped, but registration (with the NZ Companion Animal Register) has not been completed, leaving an animal with an electronic number and no record to reconcile with. This further reduces the effectiveness of reuniting of animals in emergencies and it is recommended that for non-dog companion animals.

Amendment to the Dog Control Act 1996

s.35 Supply of information

Any *approved organisation* should be included in the list of organisations who can access dog registration information.

A *Controller*, during a state of emergency should be included in the list of organisations who can access dog registration information.

And any other organisation or person gazetted by the Minister.

New section

s.35A A organisation gazetted by the Minister (i.e. NZCAR) may be granted access to data contained on the National Dog Database as such conditions the Minister imposes for the reuniting and welfare of animals. Where such access is granted, the Secretary of Department of Internal Affairs may cover such costs in doing so from levies collected under section 35B.

Amendment to the Animal Welfare Act 1999

Add: A person commits an offence who, implants a microchip into a companion animal (not being a dog) and fails to register the animal on the gazetted microchip register (i.e. NZCAR). This section does not apply to

- (a) animals being used for research, teaching and training, under an approved code of ethics.
- (b) any person or organisation that has a written notice of exemption issued by the Director-General.

Personation of disability assist dogs

There is a global trend of dog owners impersonating that their dog is a disability assist dog to allow them to access public places and transport. This also has occurred in NZ emergencies with owners attempting to bring their dogs inside human evacuation shelters inappropriately [7]. This undermines the legitimacy of genuine disability assist dogs [27]–[29]. To help minimise this, a civil defence dog tag was introduced to help civil defence workers easily identify legitimate service dogs given there is no standardised identification system for such animals [29]. The Human Rights Act has provisions for Guide Dogs, but this is inconsistent to the wider application of “disability assist dog” as contained in the Dog Control Act.

Amendment to Human Rights Act 1993

S.21 Prohibited grounds of discrimination

Change: Substitute *guide dog* for *disability assist dog*, having the same meaning under the Dog Control Act 1996.

Amendment to Dog Control Act 1996

New section: 75A Impersonation of disability assist dog (new)

A person commits an offence who intentionally personates or falsely represents or identifies their dog to be a disability assist dog (and add to Schedule 1: Infringeable Offences). For the purposes of this act, any use of a similar term such as service dog shall also be considered as personating a disability assistance dog.

New section: 75B Identification of disability assist dogs (new)

The Minister may gazette a form of identification to identify disability assist dogs, in consultation with certifying organisations at that time.

In respect to the Canterbury earthquakes: “Christchurch didn’t go smoothly from what I saw and heard. More animals than resources. People turned up to the welfare centre with animals and were told to take them to SPCA, but had no transport to get them there, and were more or less just turned away. At one stage when I was manager at a welfare centre I had to do battle as there was a woman with a hearing dog, not only that the woman had mental health issues. I had to fight to get the staff to let them in, then the other staff kept trying to remove her. They had all never heard of a hearing dog before, great learning for them, however extremely traumatic for the woman who spent hours in tears” (confidential personal communication, 2010) [7].

Service dog identification is easily available online to purchase and contributes to personification of legitimate disability assistance dogs.

The screenshot shows several Amazon product listings for service dog identification. At the top, there are three sponsored ads for 'Service Animal Cards' by Xpress ID, including a 'Dog ID Card (Custom)', a 'Key Tag (Set of 3)', and a 'PRO BUNDLE'. Below these are four more sponsored listings: 'The Dog's Right! Service Dog Photo I.D. Bundle', 'Activedogs Service Dog Vest Harness', 'Xpress ID HoloSeal holographic Service Dog ID', and 'Service Dog ID Tags - Personalized Front and Back Premium Aluminum'. Each listing includes a product image, a price, and a 'FREE Shipping' label.

Source: Amazon website (2018).

Failing to prevent harm and protect animals from hazards

The majority of animal welfare laws have a statutory defence under codes of welfares or in times of emergency or stress. Emergency is not defined in the Animal Welfare Act 1999. It is important that owner responsibility during an emergency does not necessarily stop where there are reasonable opportunities to prevent harm. In Texas, their state law makes it an offence to tether a dog during extreme weather and where weather warnings are in place [30] – this is one of the best animal disaster laws noted.

Amendment to the Animal Welfare Act 1999

Add: s.14A Duty to protect companion animals in emergencies

- (1) A person commits an offence who, being the owner of, or a person in charge of, a companion animal, without reasonable excuse or having taken reasonable steps, fails to protect a companion animal from harm, caused by or likely to be caused by extreme weather conditions or an emergency.
- (2) In a prosecution for an offence against section 14A(1) committed after the commencement of this subsection, evidence that a relevant code of emergency welfare was in existence at the time of the alleged offence and that a relevant minimum standard established by that code was not complied with is rebuttable evidence that the person charged with the offence failed to comply with, or contravened, the provision of this Act to which the offence relates.
- (3) Subject to subsection (4), it is a defence in any prosecution for an offence against section 14A(1) if the defendant proves—
 - (a) that, in relation to the animal to which the prosecution relates, the defendant took all reasonable steps to comply with section 14A(1); or
 - (b) that there was in existence at the time of the alleged offence a relevant code of emergency welfare and that the minimum standards established by the code of emergency welfare were in all respects equalled or exceeded.

(4) Except with the leave of the court, subsection (3) does not apply unless, within 7 days after the service of the summons, or within such further time as the court may allow, the defendant has delivered to the prosecutor a written notice—

(a) stating that the defendant intends to rely on subsection (3); and

(b) specifying—

(i) where the defendant intends to rely on subsection (3)(a), the reasonable steps that the defendant will claim to have taken; or

(ii) where the defendant intends to rely on subsection (3)(b), the code of emergency welfare that was in existence at the time of the alleged offence, and the facts that show that the minimum standards established by that code of emergency welfare were in all respects equalled or exceeded.

(5). Nothing in this section requires the owner or person in charge of a companion animal to return to an evacuated area to retrieve their animal where such an area remains under the control of a constable or controller or the area remains unsafe to do so.

Add definition in section 2. Interpretation

Extreme weather includes but not limited to conditions in which:

(a) the actual or effective outdoor temperature is below freezing point; or

(b) an actual storm, flood or tornado or such an event where a weather warning has been issued.

Amendment to Dog Control Act 1996

s.54A Obligations of dog owner during extreme weather (new)

Add: (1) A person commits an offence who, being the owner of, or a person in charge of, a dog, without reasonable excuse or having taken reasonable steps, leaves a dog outside unattended by use of a restraint including a tether or cage, that unreasonably limits the dog's movement and to access a place of safety:

(a) in the case of extreme weather conditions, or

(b) in an area that has been required to evacuate during an emergency

(2) Nothing in this section requires the owner or person in charge of a dog to return to an evacuated area to retrieve their dog where such an area remains under the control of a constable or controller or the area remains unsafe to do so.

Add to schedule 1 (Infringeable offences)

Add definition: *Extreme weather* includes but not limited to conditions in which

(a) the actual or effective outdoor temperature is below freezing point;

(b) an actual storm, flood or tornado or such an event where a warning has been issued

Add definition: *Controller* means a controller appointed under sections 10, 26 or 27 of the Civil Defence Emergency Management Act 2002.



Tethering of dogs during extreme weather such as flooding is illegal in the State of Texas. With no means to escape, these dogs are prone to drowning as this dog did during Hurricane Katrina in 2005.

Codes of Ethics

Laboratory animals in particular are particularly vulnerable to disaster, often relying on automated environmental, food and water systems [6], [31]. If such facilities are disaster affected, it is common that those in charge of the animals are unable to access them.

S.88(2)(h) new section for code of ethics contents

Add: Specify emergency management arrangements to protect animals from the impacts of natural and technological hazards appropriate to the research and facilities.

Dog Control Bylaws

The Dog Control Act 1996 provides for local authorities to set bylaws mainly for matters pertaining to exercise areas and the like. However, in a state of emergency it would be appropriate to allow the Controller the power to make temporary variations to allow for traditional dog free areas such as sports fields or other public places, to be used for emergency exercise and/or accommodation areas. If off-leash bylaws were ignored during an emergency, it may create legal and political liability around any damage caused by dogs that would normally be banned in such areas [11].

Amendment to Dog Control Act 1996

s.20 (2A) Emergency bylaws (new)

Add: During a state of emergency or major incident under the Civil Defence Emergency Management Act 2002, the Controller may pass, cease, suspend or modify bylaws under this section if required for the control and welfare of dogs and these shall only have effect while the state of emergency is in effect.

Dog Control Jurisdiction

Dog Control Officers and Dog Rangers may only exercise their powers within their respective local authority boundary. There is provision to allow for councils to allow other council officers to exercise powers in their area [11]. This is suitable for day to day contractual arrangements for cover, but cumbersome in an emergency where establishing such agreements may not be expedient.

Amendment to Dog Control Act 1996

s.16(3) Districts in which dog control officer or dog ranger may exercise powers

Add: During a state of emergency or major incident under the Civil Defence Emergency Management Act 2002, the powers of any dog control officer and dog ranger shall extend to local authority or authorities to which the declaration applies to.

Power to seize

The power to take into possession an animal at risk from imminent harm is provided for under section 127(5)(c) of the Animal Welfare Act 1999, however it is limited to inspectors and requires a notice of entry to be left which during a major incident or emergency may not be practical. The Civil Defence Emergency Management Act 2002 has provisions to seize an animal, by anyone directed by the Controller or Constable, but no disposal provisions have been made in the act causing a significant legal issue [11].

Amendment to Dog Control Act 1996

Section: 15A Emergency powers of dog control officers and dog rangers (new)

Add: During a state of emergency or major incident under the Civil Defence Emergency Management Act 2002, a dog control officer or dog ranger may enter upon any property including any dwelling house for the purposes of seizing a dog that is at risk of imminent harm.

Holding periods

The American Bar Association as a result of the issues following Hurricane Katrina developed a model law for states to adopt, that clarified the provisions for disposal of disaster displaced animals [32]. The key element of the law is that stray hold periods were extended to 30 days. Many states have adopted the model law including the state of Oklahoma [33].

Amendment to Dog Control Act 1996

S69 Impounding, s15(1)(c) Dogs Seized and 15A Emergency Powers (new)

Where a dog is impounded or seized within the area declared under a state of emergency or major incident under the Civil Defence Emergency Management Act 2002, the holding period shall be extended from 7 days to 30 days; and the dog shall also be advertised on a lost and found database as gazetted by the Minister of Civil Defence.

Amendment to the Animal Welfare Act 1999

S.141 Duties of approved organisations

Add: Where an animal is taken into custody of an approved organisation and that animal is believed to come from within the area declared under a state of emergency or major incident under the Civil

Defence Emergency Management Act 2002, the holding period shall be extended from 7 days to 30 days; and the animal shall also be advertised on a lost and found database as gazetted by the Minister of Civil Defence.

Amendment to Civil Defence Emergency Management Act 2002

S.92A Disposal of property seized (new)

Where property or another other thing excluding an animal is seized under section 92, the Civil Defence Emergency Management Group may dispose of it as deemed fit upon termination of the emergency. Where an animal is seized under section 92, is shall be delivered to an approved organisation (Animal Welfare Act 1999) and disposed of under the provisions of section 141 (noting the 30 day hold period would apply).

Humane Trapping

Following evacuations in particular, it is common for some animals to be left behind for various reasons. Given these areas are often cordoned off to the public, these animals can stray and are exposed to many hazards without any monitoring of their health or wellbeing. Leaving animals in-situ and feeding them creates numerous challenges such as blurring of who become the legal person in charge, encourages rodents and other vermin. Feeding in-situ may also become a public health issue. Currently, there are no laws to provide for humane trapping which expedites reuniting of pets with their owners, prevents owners from returning (often illegally) to rescue their pets and ensures owners remain responsible for the ongoing care of their animals [11]. Feeding in-situ is also very time and resource intensive, and best left for special circumstances such as aggressive dogs or large numbers of caged animals (large aviaries etc). In a world first, we can provide for post-disaster humane trapping.

Amendment to Civil Defence Emergency Management Act 2002

s.92B Emergency humane trapping (new)

During a state of emergency, the Controller may direct suitably qualified or experienced persons to undertake the humane trapping of disaster displaced animals within the affected area. Animals caught in such traps, shall be delivered to the custody of an approved organisation.

Such direction does not limit the obligations under section 36 (Inspection of traps) of the Animal Welfare Act 1999.

Section 94N would also need to be amended to reflect this power during the transition period and authorise the Recovery Manager similar power.

Animal Establishment Emergency Plans

Animal establishments as defined in the Animal Welfare Act means a place at which animals are used or held in the charge of any person, and which has, as its principal purpose, the using or holding of animals for display, sport, entertainment, temporary care, sale, conservation, scientific study, or other activity. Currently there is no obligation to ensure plans are in place to afford them protection. In mandating such plans, this will remove a large burden from government and the community should these establishments be unprepared and become impacted from disaster [11]. Specific laws to mandate animal establishment emergency planning are currently before US Congress [34] and already in place in some states such as Louisiana (RS 29:726):

“Require animal shelters, humane societies, veterinary offices, boarding kennels, breeders, grooming facilities, hospitals, schools, animal testing facilities, and any other businesses or not-for-profit agencies that normally house household pets or service animals to create evacuation plans for such animals consistent with the provisions of this Paragraph. Such plans shall be made available to the public upon request and shall be filed annually with the Louisiana Department of Agriculture and Forestry, office of animal health and food safety, and with their respective parish office of homeland security and emergency preparedness”.

Amendment to the Animal Welfare Act 1999

New section. s.29A Emergency Plans. Every animal establishment shall develop and maintain an emergency management plan that:

- (1) Identifies the hazards that may threaten or impact the establishment
- (2) Provides for the reasonable mitigation of such hazards
- (3) Specifies actions and responsibilities in the event of an emergency arising from such hazards
- (4) Is appropriate to the size and scale of the establishment
- (5) Details how the welfare of animals within the establishment is provided for
- (6) Specifies the training, exercising and review requirements to ensure the plan is effective and maintained.
- (7) Meets the requirements prescribed by a standard for such plans, as set by the Director-General.

Each plan shall be available for inspection at any reasonable time, by an Inspector or Auditor appointed under the act.

The Director-General may exempt types or individual animal establishments, after consulting NAWAC.

The Director-General may develop a standard for animal establishment emergency plans, after consulting with NAWAC.

Amendment to the Animal Welfare (Care & Procedures) Regulations 2018

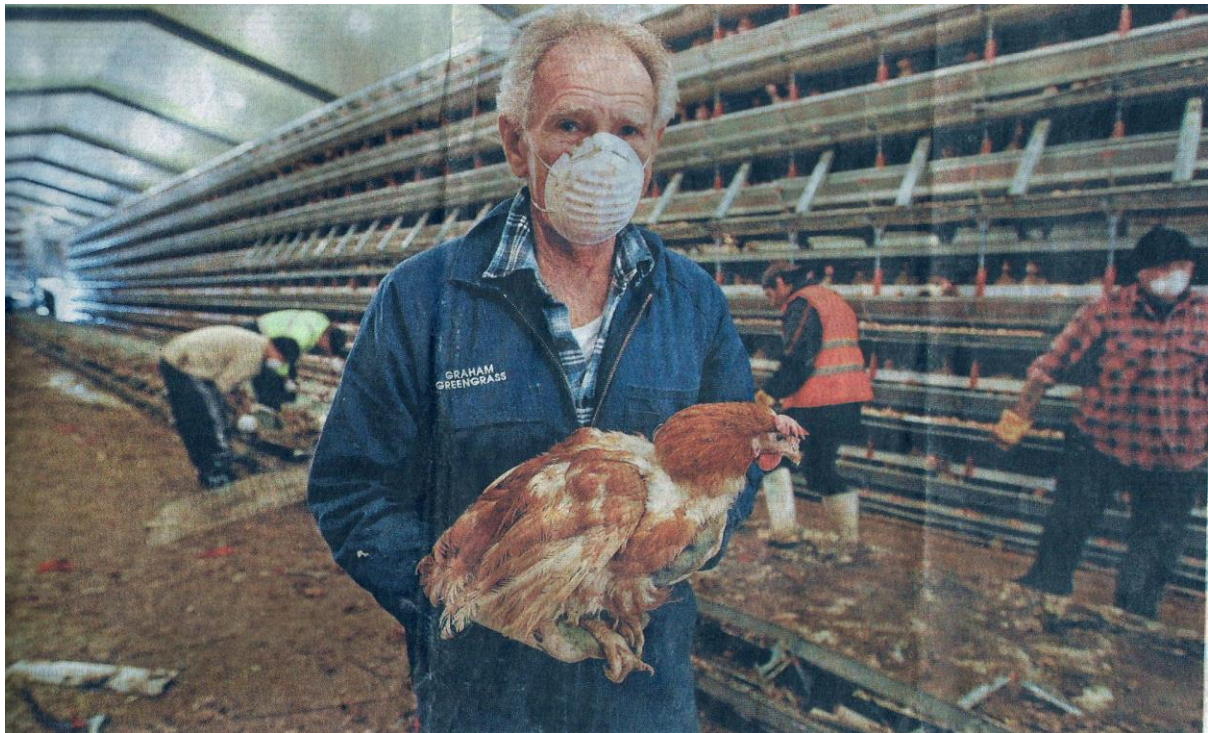
Add 49A Emergency Plans

The owner of, and every person in charge of an animal establishment must provide request a copy of the establishment's emergency plan for inspection by an Inspector or Auditor, unless an exemption is in place.

A person who fails to comply with this regulation commits an offence and is liable on conviction to a fine not exceeding \$1,500.

The offence in subclause is an infringement offence with an infringement fee of \$500.





Source: *Sunday Star-Times* (12 September 2010):

Around 3,000 birds were killed or required to be destroyed after caging stacks at the Weedon Poultry Farm failed during the September 2010 (Darfield) earthquake. The Army were called into assist. This is often the case where producers do not have confidence in animal rights groups to assist in emergency response. In 2000, several tornadoes struck layer hen sheds at the Buck Eye Egg farm in Ohio. Over million hens became injured or trapped in storm damaged cages. Many were buried injured and alive, despite crude attempts at euthanasia [6]. It was clear this major facility had little emergency management plans including mitigation in place.

NAWAC membership

The Animal Welfare Act 1999 specifies the requirements for membership of the National Animal Welfare Advisory Committee. Should this mechanism be continued under the new coalition government, then there are some deficiencies that should be. Given climate change, it is likely there will be more climatic events like Edgumbe. With intensification of farming practices, more animals will be vulnerable to disaster. It is likely that more animals will suffer from these events, than from neglect or cruelty meaning the Minister's advisory panel needs to have the expertise to advise the Minister on such matters [11]. Additionally, given the need to encourage more animal shelters to be compliant with disposal laws, there should be an increase in approved organisations (not necessarily with enforcement powers) and these should be fairly represented and not purely the domain of a single animal welfare charity. NAWAC should be solely an animal advocacy voice and leaving the remit of other considerations such as cultural practices, rural communities with other advocacy processes.

Amendment to the Animal Welfare Act 1999

s.58 NAWAC Membership

Change: s.58(1) National Animal Welfare Advisory Committee consists of not more than 14 (increased from 11).

(3) The Minister must, in making appointments under subsection (2)(b), have regard to the need for the Committee to possess knowledge and experience in the following areas:

(j) Animal disaster management

(k) Operation as an Approved Organisation

Mandated Organisations

Under the National Civil Defence Emergency Management Plan Order 2015, the SPCA is only mandated to assist the owners of companion animals to mitigate suffering. The CDEM Act 2002 does not define the mitigation of suffering. The legislative term mitigation of suffering is found within the Animal Welfare Act 1999 and provides inspectors the power to undertake or direct the humane destruction of animals that are sick or injured under section 130. This function as per the National CDEM Plan Order 2015, could continue given under the plan the SPCA's only mandated function is to assist owners of companion animals to mitigate suffering. There is no other mandated function upon the SPCA such as temporary accommodation of companion animals. The mandated function of companion animal care, relocation and accommodation is bestowed upon the local authority through their animal control service. The SPCA has no mandated function for reuniting companion animals, nor any function for non-companion animals such as laboratory animals or livestock under current civil defence arrangements [11]. Should the SPCA not guarantee a response capability or is overwhelmed, which the latter is more likely, government has an obligation to ensure the legislative framework has contingencies and encourages all relevant community groups to be part of disaster resilience in accordance with its national civil defence emergency management strategy. Given that more animal welfare groups should be encouraged to improve their compliance with the Animal Welfare Act in regard to rehoming of abandoned animals in particular, the National CDEM Plan Order should take an inclusive approach and not be charity specific. The exclusion of other animal groups will likely result in major fragmentation such as in Hurricane Katrina where over 120 charities descended into the affected area, with over 50 temporary shelters being set up without any integration or information sharing [2], [35]– ultimately leading to reuniting failure and reduced animal welfare outcomes.

The proposed arrangement future proofs the legislative framework for changes in participating organisations and sets expectations for all approved organisations to have responsibilities during an emergency. At the National Hui on Animal Welfare held in Auckland on 8th of June 2018, many other charities raised their concerns of the lack of collaboration and engagement by the SPCA as well as animal welfare advice concerns given by the society [36]. The SPCA Chief Executive has also made comment in the media that centres around the country were about to reach crisis point and “we can't take in any more animals” [37], highlighting a significant risk for the government to rely on an already overburdened on a day to day basis, let alone an emergency.

Amendment to National Civil Defence Emergency Management Plan Order 2015

S.75(3) Animal Welfare (amend)

Approved Organisations (~~RNZSPCA~~) under the Animal Welfare Act 1999, to provide direct support and co-ordination services to companion animal owners to assist in mitigating animal suffering as a result of an emergency OR If RNZSPCA to remain then ADD Animal Evac New Zealand Trust may provide assistance to any civil defence emergency management group, local authority or any other agency in the National CDEM Plan Order in the interest of animal welfare, in particular the evacuation, temporary sheltering and reuniting of animals.

Registration of displaced dogs

The Dog Control Act 1996 has been written with only reference to the “Societies for the Prevention of Cruelty to Animals”, which is somewhat outdated given some of the largest animal shelters are now run by other charities such as HUHA. In line with previous recommendations to move to neutral terminology and create redundancy in animal disaster care capacity, the Dog Control Act 1999 should be modernised to refer only to “approved organisations”. This would then allow other organisations to hold disaster displaced dogs, without an obligation to have them registered whilst in custody. To some degree, where such organisations are operating under local authority dog control during an emergency to operate an animal shelter, they are not obligated to have all dogs within their care registered. However, to avoid any ambiguity, section 42 (offence for failing to register dog) of the Dog Control Act 1996 should be updated. The section also requires dogs to be registered at the time of release or before being returned to the owner, however this may not be appropriate during an emergency and an exemption is sought.

Amendment to Dog Control Act 1996

s.42 Offence of failing to register dog

(3)(c) keeping the dog in the custody of an approved organisation under the Animal Welfare Act 2002 pending the dog’s—

(i) recovery by its owner; or

(ii) disposal to a new owner.

(4) However,—

(b) Except during a state of emergency, a person to whom subsection (3)(b) or subsection (3)(c) applies must not dispose of a dog (other than by destroying it), unless the dog is first registered under this Act.

Animal Population Data/Census

Effective emergency planning requires animal population data to underpin assumptions in planning and response, as recommended by the OIE emergency management guideline [38]. Currently, animal population data is fragmented and no organisation taking the lead to collate such information from the range of sources including MPI, Statistics NZ, National Dog Database, NZ Companion Animal Register, and the NZ Companion Animal Council Census. It is recommended that MPI (or statistics NZ) is responsible for provide animal census data for emergency management purposes and collating such data from the range of sources.

Amendment to National Civil Defence Emergency Management Plan Order 2015

S.75(3) Animal Welfare (amend)

The Ministry for Primary Industries is responsible for the periodic publication of local, regional and national animal population statistics. The Ministry is also responsible for the supply of data for emergency management purposes to Civil Defence Emergency Management Groups.

Destruction of Animals

The destruction of animals during emergencies is highly emotional and fraught with political risk. An example of this was St Bernard Parish during Hurricane Katrina where two Sherriff Deputies shot and maimed numerous pets that were told to be left behind at a community assembly point. The shooting was allegedly done inhumanely, and photographs of the crime scene painted a horrific blood bath. The Deputies were indicted on serious animal cruelty charges; however, the case was withdrawn due a technicality [8], [35], [39]. The provisions with the Civil Defence Emergency Management Act 2002 provide out-dated and draconian powers for the unbridled destruction of animals. Should there be grounds to destroy animals due to sickness or injury, such provisions already exist under the Animal Welfare Act 1999. It would be appropriate to only provide powers to electively destroy animals under strict conditions, such as limiting this power to the Controller (not any constable) and in consultation with an Animal Welfare Inspector.

Amendment to Civil Defence Emergency Management Act 2002

S.92 Power to inspect

No animal shall be destroyed under this enactment, unless authorised by a Controller who has consulted an Inspector appointed under section 124(2) of the Animal Welfare Act 1999 or veterinarian.



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“I promise you, that I will hold anyone accountable that unlawfully restrains their dog in extreme weather conditions,” “Dogs are your family members too.” [40]

Roman Forest City Chief Stephen Carlisle

“Animal abuse in Texas will be met with harsher punishment starting in September. A law was passed that will hold abusers accountable for up to a decade in prison if found guilty. That means that if the

Texans that **chained their animals up in Hurricane Harvey** are found, they could fall under this law and spend **ten years in prison**" [41].

Deceased companion animals

In Hurricane Katrina more than 90% of animals left behind died. In the Edgecumbe 2017 flood, the SPCA's protocol was to recover deceased companion animals where possible at the time of the search to reduce the degradation of the body and to expedite the closure of the loss for the owner. This in turn, created significant goodwill with the community and removed, in many cases, the desire to breach the cordons to find their animal. This best practice should be included into the legislative arrangements to improve future responses [11].

Amendment to National Civil Defence Emergency Management Plan Order 2015

S.75(3) Animal Welfare (amend)

Notwithstanding section 85(1)(g), the local authority shall be responsible for the collection of deceased companion animals and in doing so should check for animal markings to enable notification to the owner or an approved organisation.

Removal of dog collars

During Hurricane Katrina it was observed that some volunteers involved in searching for and rescuing animals left behind, intentionally removed collars and other identification in an attempt to reduce the likelihood of reuniting with the owner, as they believed the owners were of bad character to have abandoned their animals in the first place [2]. Though the Dog Control Act has provisions for the prohibiting the removal of collars to deceive, it may not be sufficient to cover the intent to minimise reuniting, nor does it prevent removal of collars that do not bear a registration disc (i.e. a dog collar without a registration disc but has a phone number tag could be removed currently without offence). This offence also only applies to dogs and cats may be subject to the indirect abuse of having their identification removed.

Amendment to the Animal Welfare Act 1999

s.29 Further offences

A person commits an offence who—

Add: (i) removes any collar, disc or animal marking from an animal during a major incident or state of emergency, with the wilful intent to hindering the reuniting of that animal to its owner.

Emergency Accommodation

In the recovery phase after an emergency, experience has shown nationally [42] and internationally [43] that rental accommodation availability reduces in disaster affected areas due to damage of homes and dwellings. The lack of pet-friendly rental accommodation associated with this contributes to unnecessary euthanasia of companion animals, adding to the trauma (and guilt) of those already affected by disaster and removes an often trusted and existing source of psychosocial support [42]. New Zealand has been proactive in being more pet-inclusive in our society with recent changes to Housing New Zealand policies and companion animals able to be taken on public transport (in Wellington). New Zealand has an opportunity to create world leading animal emergency management laws that protect the family unit following a disaster. This would be achieved by making it illegal to

discriminate against a tenant for rental properties, based on companion animal ownership during a recovery transition period. This will lead to better mental health and animal welfare outcomes.

Amendment to Residential Tenancies Act 1986

S.12 Discrimination to be an unlawful act

A landlord shall not, in respect of the grant, continuance, extension, variation, termination, or renewal of a tenancy agreement,—

Add: (c) Discriminate against any person on the basis of companion animal ownership while a transition period is in effect under the Civil Defence Emergency Management Act 2002; and where the owner has as written certificate or statement issued by a veterinarian that confirms the animal's suitability to reside in the property being tenanted.

Add: (5) Nothing in section 12 (1)(d) shall apply tenancies involving dogs classified as menacing or dangerous under the Dog Control Act 1996.

Political Leadership

Under the National Civil Defence Emergency Management Plan Order, the government's high-level crisis coordination mechanisms are explained including the National Security Committee (NSC), Officials Domestic & External Security Committee (ODESC) and Watch Groups. The vagueness may be well placed, however it was clear in events such as Edgecumbe that animal welfare which a major issue for government, did not have sufficient representation at these meetings [10]. The Minister responsible for animal welfare should by default be invited to NSC, and the Director General of MPI should be attending ODESC. It would be appropriate to clarify the expected membership for civil defence emergencies on these groups, especially given all significant emergencies in the past decade have had major animal related issues that went largely unresolved and have a negative impact on animal welfare and community wellbeing. The absence of robust review, debriefing and after action reporting within MPI's animal emergency management processes also draws concern [9], [10], [44], despite obligations under section 158 of the National Civil Defence Emergency Management Plan Order 2015.



Credit: Associated Press. Case Study: The 2016 Kaikoura Earthquake made news headlines with the world more concerned about the fate of the three cows stuck on a landslide island, than the impact on the human population. The way we treat and respond to animals in disaster is a reflection on our society and reputation.

Other Socio-Zoologically Vulnerable Animals

Following the 2016 Kaikoura earthquake, GNS Scientist Kevin Berryman observed the seabed was vertically displaced some 6 metres along the coastline, rendering trapped crabs, fish and paua unable to return to the water [45]. Other media reports corroborated these observations with crayfish and lobster also being observed as stranded by the uplift and despite public officials warnings not to, community members returned to relocate the sea life back into water [46]. There was significant backlash by the public to the government direction to stop the sea life rescue attempts. A Ministry for Primary Industries fisheries officer threatening to arrest the paua rescue volunteers [47]. With hundreds if not thousands of crabs, lobsters, fish and crayfish stranded and dying, no government agency took responsibility for the welfare of these animals, despite them being afforded the same protections under the Animal Welfare Act 1999 as companion animals (acknowledging that paua are not classified as animals and therefore not protected under the Animal Welfare Act 1999). Simplistically, the government sets the maximum number of fish that can be legally taken from the sea through a quota system or *allowable catch*. The efforts by the public to rescue the fish were treated as breaches of fishing quota by officials, whereas in many cases, people were acting in the interests of animal welfare. It is unclear whether the provisions of section 16 (emergency measures) would be effective in enabling rescue of fish, those protected under the Animal Welfare Act 1999 or otherwise. In effect, there is no agency or body responsible for the welfare of these animals during an emergency and this legislative gap needs to be addressed.

Amendment to National Civil Defence Emergency Management Plan Order 2015

S.75(3) Animal Welfare (amend)

The Ministry of Primary Industries is responsible for the welfare of fish, lobster, octopus, squid and crayfish found in a natural state or any other species that the Minister directs, where such animal's welfare is compromised during a state of emergency or major incident.

MPI shall include such responsibilities in the National Animal Welfare Emergency Management Plan they will be responsible for.

Code of Emergency Animal Welfare

The Animal Welfare Act 1999 allows for Codes of Welfare to be set that set minimum standards for animals. However, a person where prosecuted under section 12 or 29(a) of the Animal Welfare Act (where most offences fall) has a defence to these section's statutory liability, should "the act or omission constituting the offence took place in circumstances of stress or emergency, and was necessary for the preservation, protection, or maintenance of human life".

The terms stress and emergency are not defined in the Animal Welfare Act 1999. This means, the Codes are ineffective in setting minimum standards for emergency situations. There is also significant research to suggest that in reality, protecting animals leads to protecting humans, so the clause around necessary for the protection of human life may be conflicted.

Therefore, it is recommended that the Minister may issue a Code of Emergency Animal Welfare, that sits outside the strict liability and statutory defence provisions [11].

A new Code of Welfare (Temporary Housing of Animals) was issued in September 2018. The code states the code does not apply "temporary housing of companion animals in temporary emergency shelters during civil defence and other emergency situations" [48, p. 5], yet it sets a minimum standard (#15: Contingency Planning) "Staff must be suitably trained to respond to an emergency that could

have a detrimental effect on the animals in the temporary housing facility” [48]. In effect failing to provide this renders the standard invalid.

Without the Animal Welfare Act 1999 providing an offence for failing to have a contingency plan (as recommended in this report under *Animal Establishment Emergency Plans*), the minimum standard is benign and unenforceable.

It would appear the consultation process and legal review of the Code has been sub-optimal, and the drafting of the code has been done as if it's legislation without providing for situations of emergency under the Animal Welfare Act 1999. Such processes require further attention.

Amendment to the Animal Welfare Act 1999

s.79A Codes of Emergency Welfare (new)

The Minister may issue a Code of Emergency Welfare (using the same process as that specified for a Code of Welfare) to establish minimum standards of animal welfare during emergency situations.

Sponsorship restrictions

Some major animal charities have commercial agreements around brand association, which may become restrictive in an emergency and prevent other suppliers from actively participating in emergency response in the interest of animal welfare. It is important that expectations on such suppliers are managed, in that any such agreement should not impeded the provision of relief during a state of emergency. This issue may extend to non-animal relief provision in an emergency also.

Amendment to Civil Defence Emergency Management Act 2002

S.92C Contracts not to affect relief (new)

No contract or agreement shall impede the effective provision of functions, powers, or duties under this enactment.

Local authority to be an approved organisation in an emergency

The National Civil Defence Emergency Management Plan Order 2015 places responsibility for companion animal emergency care, transportation and accommodation on local authorities. However, unlike an approved organisation they do not have any legal provisions for the disposal of animals other than dogs, and even then, only for dogs that have been impounded for being stray or seized due to offences under the act. This is a major oversight by the responsible departments [11]. Though any organisation including local authorities could apply to the Minister to become an Approved Organisation, this would be cumbersome given the large number of authorities and not all may want to have the wider scope of duties associated with being an approved organisation on a day to day basis. Therefore, it is recommended that during a state of emergency or major incident, that the local authority is by default an approved organisation for the purposes of carrying out their mandated function under the National CDEM Plan Order; and that Dog Control Officers and Dog Ranges are by office, deemed Auxiliary Officers under the Animal Welfare Act to allow for compliance associated with disposal of animals.

Amendment to the Animal Welfare Act 1999

s.121 (1A) Approved Organisations

Add: The local authority shall be deemed an Approved Organisation during a major incident, state of emergency or transition period as defined by the Civil Defence Emergency Management Act 2002, for the sole purpose of carrying out their function specified in the National Civil Defence Emergency Management Plan Order, unless the Minister approves otherwise through an application received under section 122.

S.2 Interpretation

Auxiliary Officer includes by virtue of appointment under the Dog Control Act 1996 any Dog Control Officer or Dog Ranger during a major incident, state of emergency or transition period as defined by the Civil Defence Emergency Management Act 2002.

Reinforcing existing powers of Inspectors not affected

During the Christchurch quake and Edgecumbe Flood events, it was evident that response agencies had little to no knowledge of the powers of an inspector, pursuant to the Animal Welfare Act [10] and in several cases, government officials hindered or obstructed them in their duty and power to enter premises to take into possession animals at risk of imminent harm (s.127(5)(C)). Under the Civil Defence Emergency Management Act 2002, it is made very clear in section 6, the CDEM act does not limit the powers under other enactment.

Amendment to National Civil Defence Emergency Management Plan Order 2015

S.75 Animal Welfare

Add: Nothing in this plan shall limit the powers, duties or functions of Inspectors or Auxiliaries appointed under the Animal Welfare Act 1999, or Dog Control Officers or Dog Rangers appointed under the Dog Control Act 199.

Notice of entry requirement during an emergency

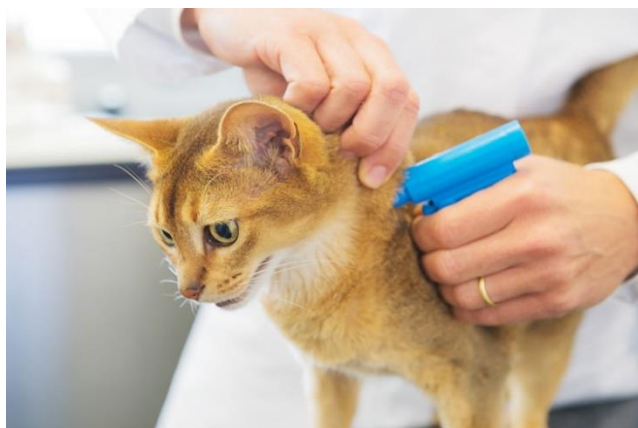
Animal Welfare Inspectors on a day to day basis, exercise significant powers similar that to a Constable (only minus the power to arrest or detain a vehicle). They are however required to leave a notice of entry where they enter upon a property, including for taking an animal into possession where it is at risk of imminent harm. In large scale disasters, this administrative requirement may impede the expeditious rescue of animals. Though there are some provisions under section 131(4)(b) of the Search and Surveillance Act 2012 for such notices to be given to occupiers within 7 days if not practical to serve at the time of entry, during a large-scale event, this administrative obligation may become burdensome and not appropriate for non-compliance “rescue” activities. The removal of such an obligation would be consistent to the Fire & Emergency Management Act 2017 and Civil Defence Emergency Management Act 2002, that both do not mandate notices of entry to be served for similar lifesaving powers. It is recommended that during a state of emergency, this mandatory requirement be relaxed. With the increased requirements recommended under this report, any animal rescued will be required to be recorded on one central/national database to make reuniting efficient.

Amendment to the Animal Welfare Act 1999

s.129 Notice of Entry

Change: *Except for during a state of emergency*, if the person in charge of the land, premises, or place or the vehicle, aircraft, or ship, as the case may be, is not present at the time at which a power of entry is exercised, without warrant, under section 127, the inspector must leave in a prominent place on the land, premises, or place or in or on the vehicle, aircraft, or ship a written statement...

Power to microchip during an emergency



“Following the 2011 quake the NZCAR provided support services to SPCA Canterbury. In a 12 week period we dealt with over 24,000 phone calls and faxes and placed over 800 ads for chipped and non-chipped pets. Of the hundreds of animals we dealt with we managed to get 25% of non-chipped pets home within 2 to 3 days. However **we managed to get over 85% of microchipped pets home in under 3 hours.**” [49]

Amendment to the Civil Defence Emergency Management Act 2002

s.92D Power to mark animal (new)

During a state of emergency, an Inspector or Auxiliary Officer may cause an animal to be marked (refer definition: animal marking).

Public transportation of companion animals

As a result of the experiences of Hurricane Katrina, the Pet Emergency & Transportation Standards Act 2006 introduced the requirement that the transportation of pets be included in emergency arrangements. Hunt et. al. (2011) found that an “inability to transport a pet during an emergency and lack of knowledge of pet-friendly emergency shelters were popular explanations for pet evacuation failure” during Hurricane Irene [50]. Examples of state laws giving effect to this requirement can be exemplified in the New Jersey state law [51].

Amendment to the Civil Defence Emergency Management Act 2002

s.92E Emergency transport of companion animals (new)

During a state of emergency, and when evacuation has been directed by a controller or constable, the owner of a companion animal shall be permitted to board any public transportation or public transportation service with the domestic companion animal so long as that animal is under the owner's control by use of a leash or tether or is properly confined in an appropriate container or by other suitable means.



Credit: Tony Alsup. Case Study: While fleeing the effects of Hurricane Florence, South Carolina resident Tony Alsup rescues and evacuates 64 animals using a school bus. This “selfie” went viral and was covered by major news channels including Washington Post, MSN News, CNN and the Daily Mail UK. During Hurricane Katrina, pets were not allowed on public transport, yet Limousines were used to transport animals to safety [52].

Protection of animals during biosecurity incidents

The current incursion of *Mycoplasma bovis* across New Zealand had led to over 37,524 cattle being culled [53]. As part of control measures pursuant to the Biosecurity Act 1993, Restricted Place Notices and Notices of Direction can be issued. These can prohibit the movement of animals (in this case cattle) unless a permit is issued. The Civil Defence Emergency Management Act 2002 does not affect the powers of the Biosecurity Act 1993, therefore even during a state of emergency (civil defence), the requirement to move cattle under such notices without a permit is illegal. The permit is issued to specific persons under the Biosecurity Act 1993, and such permitting function is not a default power upon a constable or controller. This means, in the case of *Mycoplasma bovis* (and other similar incursions affecting animals), that the safe evacuation of animals during a natural disaster event is conflicted. It is recommended that the National CDEM Plan Order mandates MPI to ensure arrangements are in place for animals under a biosecurity notice that may also be affected by a civil defence emergency. By codifying this arrangement, this ensures vulnerable stock are not put at risk during disasters.

Amendment to the National Civil Defence Emergency Management Plan Order 2015

S.75 Animal Welfare

Add: At the national, the Ministry for Primary Industries is responsible for:

Ensuring adequate arrangements are made for animals placed a notice issued under the Biosecurity Act 1993 to ensure such animals are protected in the event of a state of emergency under the Civil Defence Emergency Management Act 2002. This may include providing information to owners or persons in charge of such animals, to ensure they have adequate arrangements for the evacuation or

culling if required, and/or the provision of emergency movement conditions as outlined in a permit issued under section 134(1)(b) of the Biosecurity Act 1993.

Conclusion

In New Zealand the existing national arrangements and framework for companion animal emergency management do not currently meet international best practice. While effort is being made within the sector to address the issue, it is often ad hoc and accomplished through the sheer good will and personal interest of individuals with little or no financial and technical support. It is not appropriate to assume that charities will carry out the necessary companion animal emergency planning which is a statutory responsibility of the territorial authority, especially when national instruments do not provide for the reimbursement of their operational response costs – this makes them financially vulnerable for simply trying to help during a disaster.

The United States has implemented specific federal legislation and provided significant funding for companion animal emergency management as a result of the lessons learned following Hurricane Katrina.

New Zealand has the opportunity to mitigate the same risks and prevent similar catastrophes including the loss of human life, providing strong leadership and commitment can be exemplified by central government. We have a once in a lifetime opportunity to create world leading animal disaster laws that will enhance our vision for a resilient New Zealand.



Steve Glassey

Founder | Animal Evac New Zealand Trust
& Doctoral Candidate | University of Otago

Summary of changes

Change	Comparative Laws
1. MCDEM specifically mandated to develop and maintain National Companion Animal Emergency Management Plan.	Pet Emergency & Transportation Standards Act 2006 [USA] New Jersey State Law [54] Refer also to Annex A.
2. MPI responsible for National Non-Companion Animal Emergency Management Plan.	
3. CDEM Groups responsible for regional companion animal emergency plan, supported by local authority animal control.	Pet Emergency & Transportation Standards Act 2006 [USA] New Jersey State Law [54] Refer also to Annex A.
4. Fire & Emergency NZ responsible for coordinating and directing large scale animal rescue and animal decontamination at major incidents and during states of emergency.	
5. Dog Control registration fees may be used towards local authority animal welfare related civil defence functions (reduction and readiness activities).	
6. Definitions of companion animal, animal marking added to legislation.	
7. Dwellings may be entered without warrant by Animal Welfare Inspectors, during state of emergency and where dwelling subject to evacuation order, for civil defence purposes.	

8. Operational costs for animal welfare emergency management now reimbursed by central government (for response and recovery activities).	Pet Emergency & Transportation Standards Act 2006 [USA] Maine State Law [22]
9. Animal welfare civil defence volunteers equally able to access civil defence volunteer training funding schemes.	Pet Emergency & Transportation Standards Act 2006 [USA]
10. Powers to rescue, shelter, transport, care, treat, decontaminate, and microchip animals during emergencies.	Pet Emergency & Transportation Standards Act 2006 [USA]
11. Powers to evacuate, enter on property and requisition now are animal-inclusive.	Pet Emergency & Transportation Standards Act 2006 [USA]
12. Companion animals left behind during evacuation now to be treated as a priority for rescue and reuniting.	Pet Emergency & Transportation Standards Act 2006 [USA]
13. Offence created for impersonating the use of a disability assist dog.	New York State Law [55]. Colorado, Maine, Michigan, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Texas, Utah, and Virginia have similar laws or regulations prohibiting the misrepresentation of service animals.
14. National identification tag may be mandated for disability assist dogs.	
15. NZCAR/LostPets and National Dog Database mandated to share information, with existing levy able to be used for civil defence functionality.	State of Louisiana (RS 29:726) section (E)(a)(iii)(bb). [56]
16. Displaced animals in an emergency must be entered into onto the NZCAR/LostPets database.	State of Louisiana (RS 29:726) section (E)(a)(iii)(bb). [56]

<p>17. Offence created for failing to protect companion animals from extreme weather and during emergencies, without reasonable excuse.</p>	<p>State of Texas, <i>Texas Health & Safety Code</i>. 2007. [30]</p>
<p>18. Code of Ethics (research, testing, teaching) now require measure to protect animals from impacts of natural and technological hazards.</p>	<p>Animal Emergency Planning Act (Bill) 2015, US Congress. [34]</p>
<p>19. Controller may amend, suspend, change, create temporary emergency dog control bylaws, i.e. emergency exercise areas for dogs near evacuation centres.</p>	
<p>20. Dog Control Officer and Dog Rangers able to carry out function, duties and powers in any area subject to state of emergency.</p>	
<p>21. Dog Control Officer and Dog Ranger may seize a dog that is at risk of imminent harm.</p>	
<p>22. Stray holding periods under dog control and animal welfare acts, increased from 7 days to 30 days for displaced animals during emergency.</p>	<p>American Bar Association, 'Model Act Governing Standards for the Care and Disposition of Disaster Animals (2/10)'. [32] Oklahoma State Law (Care and Disposition of Disaster Animals, 2015) Act 4 Okl. St. Ann. § 701 – 707. [33]</p>
<p>23. Power for humane trapping operations to be undertaken including during recovery transition period.</p>	
<p>24. Approved organisations (not just specific charity) embedded in national animal welfare sub-function to promote inclusiveness.</p>	

<p>25. MPI responsible for protected animals under the animal welfare act, found in a natural state and impacted by disaster i.e. crayfish, lobster, squid and octopus.</p>	
<p>26. Animal establishments required to have an emergency management plan, and offence for failing to provide for inspection by Inspector or Auditor.</p>	<p>Animal Emergency Planning Act (Bill) 2015, US Congress. [34] State of Louisiana (RS 29:726) section (E)(a)(v). [56]</p>
<p>27. NAWAC to have “approved organisation” and “animal emergency management” experience as part of its composition.</p>	
<p>28. Local authorities become approved organisations for civil defence purposes during an emergency and recovery transition period, with dog control officers and rangers becoming auxiliary officers by default during such time.</p>	
<p>29. MPI responsible for collation of national, regional and local animal census/population data and supply of such data to CDEM groups.</p>	
<p>30. Power to destroy animals under civil defence arrangements, now subject to approval by animal welfare inspector or veterinarian.</p>	
<p>31. Dead displaced companion animals should be delivered to an approved organisation, checked for animal markings and entered onto the NZCAR/LostPets database.</p>	
<p>32. Offence created to make it illegal to discriminate tenancy applicants based on companion animal ownership during recovery transition period.</p>	

33. Code of Emergency Welfare able to be developed that applies during times of emergency.	
34. Sponsorship arrangements may not hinder relief of animal welfare aid during an emergency.	
35. Inspectors may enter to rescue animals from imminent harm without notice of entry in a state of emergency.	
36. Inspectors, Auxiliary Officers, Dog Control Officers and Dog Rangers able to microchip animals during a state of emergency.	
37. Public transportation of confined or restrained companion animals permitted during an emergency.	Pet Emergency & Transportation Act 2006. New Jersey state law [51]. See also Annex A.
38. Offence to microchip companion animal and fail to register it on the National Dog Database or NZCAR/Gazetted database.	
39. MPI to work with affected owners of animals under a biosecurity notice to ensure adequate arrangements are made for their protection during emergencies, given the movement restrictions may prevent evacuation.	

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Annex A: US State Laws (2011)

Emergency Plans for Household Pets and Service Animals- State Statutes February 2010		
State	Statute	Description
Connecticut	Conn. Gen. Stat § 28-1 (4) (D)(ii)	Definition of civil preparedness includes providing for the non-military evacuation of the civilian population, pets and service animals
District of Columbia	D.C. Code § 8-1861.01 (2009)	The Mayor shall establish an emergency preparedness plan for the protection, sheltering and evacuation of domestic animals during and following a major disaster or emergency.
Florida	Fla. Stat. § 252.3568 (2009) Fla. Stat. § 252.355 (2009)	§252.3568 - Emergency Sheltering of persons with pets. Strategies for emergency evacuation of persons with pets shall be addressed in the shelter component of the state comprehensive emergency management plan. § 252.355 Registry of persons with special needs – (3) - person with special needs is allowed to bring service animal into a special needs shelter.
Illinois	20 ILCS §3305/4 (2010)	Definition of Emergency Operations Plan means the written plan... for responding to and recovering from disasters and shall include plans that take into account the needs of those individuals with household pets and service animals
Louisiana	La. R.S. § 29:726 (E)(20) (2010)	Very extensive statute, mandates planning, education, evacuation programs.
Nevada	Nev. Rev. Stat. Ann. § 414.095 (2009)	Emergency Management Plan must address needs of persons with pets, service animals or service animals in training.
New Hampshire	N.H. RSA § 21-P:37 (VI)	Prepare a plan and program for evacuation of hearing ear dogs, guide dogs, search and rescue dogs, and other service animals as defined in RSA 167-D.
New Jersey	N.J. Stat. § App. A:9-43.1 (2010): State Emergency Operations Plan N.J. Stat. § App. A A:9-943.2 (2010): County and municipal emergency operations plans	Each county and municipality shall prepare a written Emergency Operations Plan. Plans shall include provisions, developed in support with the Dept. of Ag. To support the needs of animals and individuals with an animal under their care, including service animal in a major disaster or emergency.
New York	NY CLS Exec § 22(3)(b)(16) (2010)	Disaster response plans shall include utilization and coordination of programs to assist individuals with household pets and service animals following a disaster, with attention to means of evacuation, shelter and transportation.
Oregon	ORS § 401.272 (2007) (pets and service animal plans): ORS § 401.274 (2007) (livestock plans): amended by HB 3021 § 3031 (2009)	Office of Emergency Management in cooperation with State Department of Agriculture shall prepare a written plan for evacuation, transport and sheltering of household pets and service animals. Section 401.274 requires preparation of plans for livestock.
Texas	Tex. Gov't Code §418.043(11) (2009)	The Texas Division of Emergency Management shall assist political subdivisions in developing plans for the humane evacuation, transport, and temporary sheltering of service animals and household pets in a disaster..
Virginia	Va. Code Ann. § 44-146.18 (B)(19) (2009)	State Department of Emergency Management shall: Develop an emergency response plan to address the needs of individuals with household pets and service animals in the event of a disaster and assist the coordinate with local agencies in developing an emergency response plan for household pets and service animals.

Source: Iowa State University, 2011 [57].

Annex B: Entry, Seizure & Disposal Matrix (Draft)

Acts	Power bestowed upon	Power to enter onto Property	Power to enter dwelling	Power to take possession of animal for safety	Notice of Entry required	Disposal of animals taken into possession	Disposal of animals presented	Disposal meets ABA model law (30-day hold)
CDEM Act 2002	Controller or any Constable	Conditional to declared state of emergency only [s.87]	Conditional to declared state of emergency only [s.87]	Yes [s.92]	No	No provisions for things seized	No provisions	No
AWMA 1999	Animal Welfare Inspector, including Any Constable	Yes, power to inspect any animal. [s.127]	No, unless Search Warrant issued. [s.127(3)]	Yes [s.127(5)(b/c)]	Yes [s.129]	Where Taken into possession, by court order if not returned. [s.127(6)]	After 7 days excluding stock [s.141]	No
DCA 1996	Dog Control Officer or Ranger, or any constable	Conditional to situations involving dogs [s.15(1)(c)]	No, unless Search Warrant issued.	If limited access to food, water or shelter [s.15(1)(c)]	Yes [s.15(3)]	After 7 days from notice being issued to owner [s.71A]	Dogs only after 7 days [s.69]	No
FENZ 2017	Authorised person under Act	Yes, to protect life or property [s.42]	Yes, to protect life or property	Yes, implied by Act. [s.40(a)]	No	No provisions but may transfer to AO/TLA as not seized.	No Provisions	No

Source: Glassey, 2018 [11].



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Did Harvey Learn from Katrina? Initial Observations of the Response to Companion Animals during Hurricane Harvey

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Simple Summary: When Hurricane Harvey struck the Gulf states in 2017, a large-scale rescue effort was launched by officials and citizens to rescue both people and animals. Over a decade since Hurricane Katrina (2005), this study explores whether the reforms to afford better protection to companion animals such as the Pet Emergency and Transportation Standards Act 2006 have made a difference. Key officials from various organizations within the state of Texas were interviewed and it was found that though there has been a cultural shift to better protect animals in a disaster, formal coordination and planning mechanisms need further attention. This study also uncovered the first empirical observation of disaster hoarding where such persons used the disaster to replenish their animal stocks. This study will be of interest to those involved in emergency management and animal welfare.

Abstract: The aftermath of Hurricane Katrina in 2005 became the genesis of animal emergency management and created significant reforms in the US particularly the passage of the Pets Emergency and Transportation Standards Act in 2006 that required state and local emergency management arrangements to be pet- and service animal-inclusive. More than a decade later Hurricane Harvey struck the Gulf states with all 68 directly related deaths occurring in the state of Texas. In this study, six key officials involved in the response underwent a semi-structured interview to investigate the impact of the PETS Act on preparedness and response. Though the results have limitations due to the low sample size, it was found that the PETS Act and the lessons of Hurricane Katrina had contributed to a positive cultural shift to including pets (companion animals) in emergency response. However, there was a general theme that plans required under the PETS Act were under-developed and many of the animal response lessons from previous emergencies remain unresolved. The study also observed the first empirical case of disaster hoarding which highlights the need for animal law enforcement agencies to be active in emergency response.

Keywords: animals; disasters; hoarding; Hurricane Harvey

1. Introduction

In 2005, Hurricane Katrina struck the United States Gulf Coast causing more than 1245 human deaths and, at the time, was the costliest disaster in US history (2017: USD\$161.3 billion). This historic event epitomised the plight of animals being vulnerable to disaster and the strong bond many animal owners had with their pets. Forty-four percent of those choosing not to evacuate doing so, in part, because they were unable to take their pets with them [1]. This experience led to major reforms including the introduction of the Pets Emergency and Transportation Standards (PETS) Act of 2006 that required state and local plans to ensure the needs of companion and service animals were met

in future planning and operations. Twelve years later, Hurricane Harvey struck the Gulf States affecting over 330,000 structures, flooding over 500,000 vehicles and forcing over 40,000 people to be housed in emergency accommodation [2]. There were particularly disastrous consequences for the city and surrounds of Houston with over half the human deaths recorded in Harris County and City of Houston [2]. Hurricane Harvey will become the second-costliest disaster in US history (once adjusted for inflation) with an estimated bill over of USD\$125 billion in damages [2]. The images of Hurricane Harvey across global media documented one of community-centric response with officials calling for anyone with a boat to help assist with flood-related rescues, the Cajun Navy responding to such calls, and a significant effort to ensure the errors of Hurricane Katrina, including leaving pets behind would not happen again.

The Federal Emergency Management Agency (FEMA) estimated over 30,000 rescues were carried out during Hurricane Harvey. Despite the damage, Hurricane Harvey had a considerably lower death toll of at least 68 human lives lost directly as a result in Texas, the largest number of direct deaths from a tropical cyclone in that state since 1919 [2]. The State of Texas is the second largest State in the US with an estimated 27,862,596 residents across its 254 counties; including 4,589,928 in Harris County, which is home to the fourth largest city in the US, Houston [3].

There are many differences between the two Hurricanes and why their damages and fatalities may be so contrasting; however, the aim of this article is to explore Hurricane Harvey as a critical case study to qualitatively evaluate the effectiveness of response in a post-PETS Act implementation era. The significance of this study will help inform improvements to animal emergency management practices which ultimately influence not only protection of animals, but humans as well who are likely to exhibit protective behaviours as a result of the human-animal bond [4].

Hurricane Katrina generated a significant amount of empirical disaster related research across a wide range of scholarly disciplines. However, due to significant changes following this event such as legal reforms, this research and its recommendations may no longer provide current advice.

2. Method

A field visit was undertaken between 19 and 22 December 2017 to conduct pre-arranged meetings with those who were significantly involved in leading animal-inclusive emergency responses to Hurricane Harvey in the State of Texas. A semi-structured interview was undertaken which took between one hour and three and a half hours depending on the time available subjects had. Subjects were chosen for their organisation's high public profile through social media activity during the response to Hurricane Harvey and to ensure a cross-section of not-for-profit and local government officials who held a leadership role were interviewed. Six subjects were interviewed, and all received follow-up emails to clarify notes taken and request feedback on the final manuscript prior to peer review. To supplement the interviews, a cursory analysis of online traditional media articles was also undertaken. The interview focused on four key research questions: (1) Had the PETS Act 2006 influenced animal emergency management practices? (2) What preparatory activities had been undertaken to protect animals prior to Hurricane Harvey? (3) What were the challenges and novel complications observed by those leading the animal emergency response to Hurricane Harvey? (4) What were the key lessons from Hurricane Harvey, from an animal emergency management perspective? The semi-structured nature of the interview allowed other areas to be discussed and documented in the interview notes to provide clarity over issues raised by the respondent. Contact was made with various government organizations, such as the Texas Animal Health Commission and Harris County Public Health to validate claims made mainly regarding lack of planning and coordination. The method employed, however, does have its limitations given the small sample size and that the interview subjects are likely to exhibit a positive bias toward animal welfare given their organizations purpose and/or pro-animal welfare individual comments made in the media. The sample group also, in most cases, were active in animal welfare, and a study by Taylor et al. [5] found such groups were more likely to report issues with animal emergency response than mainstream emergency

service organizations. A positive bias toward animal welfare may also be typical of modern society, where many have companion animals and see these as members of their family [6,7].

3. Preliminary Results and Discussion

3.1. Impact of the PETS Act 2006

In discussion with the interviewed respondents, it was clear that only a minority had specific knowledge of the PETS Act. Those that did have knowledge of it displayed disappointment that it was more tokenism, lacked implementation at a practical level, and was characterised as “no carrot and no stick”. However, it was unanimous across the respondents that the memories of Hurricane Katrina had shaped a culture where the evacuation of companion animals alongside their human counterparts was now a cultural norm. This was consistent with the findings by Hunt, Bogue, and Rohrbaugh [8]. At the state level, there was no animal emergency plan in effect according to most respondents, though a draft was under development. At county and city levels, there were also no animal emergency plans in effect known to the respondents, however, a draft coordination document for Harris County was later supplied. Neither state nor local animal emergency plans were available publicly online. These observations contrast with the requirements under the PETS Act for state and local plans to include companion and service animal provisions. This potentially exposes a major shortfall in the US animal emergency management environment. Though planning expectations had not been met, some areas had activity facilitating animal emergency management meetings as part of the preparedness phase such as the Harris County Disaster Animal Management Task Force which was not known to any of the respondents. Texas is unique in the sense that it has 254 counties (the largest number of counties in a US state and the next layer of administration is at the state level, leaving the state with an unreasonable span of coordination. It was clear in discussions that planning and pre-event coordination efforts were sub-optimal in Texas, but this non-compliance is not unique to Texas, with studies in other states observing similar deficiencies in planning in the past [9]. Despite the PETS Act being in place for over a decade, it appears there has been no critical evaluation of its effectiveness by the government.

3.2. Preparedness

In addition to the lack of state and local animal emergency plans being in effect, none of the organizations interviewed had carried out any animal emergency management training or exercises. Some humane investigators, however, had completed professional development courses in swiftwater rescue as provided by Code 3. However, it was clear that operational responders across the animal welfare groups would fall well below expectations set under the National Incident Management System’s credentialing system for animal rescue related roles. None of the animal welfare groups had a dedicated emergency manager which is typical, given the constraints that these charities operate within. However, the National Alliance of State Animal and Agricultural Emergency Programs (NASAAEP) and National Animal Rescue and Sheltering Coalition (NARSC) have developed substantial resources to assist in animal disaster preparedness.

3.3. Response

Following the hurricane warning, the two major animal welfare charities emptied their shelters of animals and relocated these animals to safer locations (except for animals in protective custody due to legal reasons). This allowed the shelter to be at minimal risk from the Hurricane, but also provided more capacity to shelter displaced animals after the hurricane made an impact later. The emptying of animal shelters pre- and post-impact has become a common practice in disasters, which is encouraging.

At a local level, it appeared that animal welfare charities and emergency management operated without any significant state or county coordination or leadership. In Houston, the two major animal welfare charities appeared to already have their own operational areas with spontaneous and other

groups coming from outside the area to fill coverage voids. In some disaster-affected areas in Texas, where there was no local Society for the Prevention of Cruelty to Animals (SPCA) or Humane Society, the local animal control provided a default animal emergency response service.

It was clear that in Houston there were tensions with external organizations from outside the area, let it be within the state or outside. It was alleged that some of these organizations were unfamiliar with the local veterinary challenges, such as heartworm, distemper, and parvovirus, with such organizations having outbreaks of these diseases in their temporary animal shelters. Due to the climate and other conditions, heartworm is common in Gulf States, including Texas [10], and the local animal welfare charity shelters run regular heartworm testing and dosing clinics. Some volunteers came from areas outside of Texas where heartworm was rare. These volunteers assumed that animals presenting with heartworm was a sign of neglect and their attitudes toward owners created challenges. Self-appointed journalists also reported accusations that one of the major animal groups was euthanizing flood-displaced animals [11], however, this was strongly denied, and no evidence was found to substantiate such a claim.

The US military were highly praised by all the subjects for their response efforts, including the rescuing of animals. The military responders were well-equipped with water safety equipment (Figure 1) and placed importance on the need to evacuate animals alongside their human guardians. It was also common for each military high clearance vehicle to be assigned a rescue swimmer who had specialist flood rescue equipment and training. This contrasts with the experiences in New Zealand, such as the Edgcombe Flooding, where the New Zealand Army responded to a flooding event without any basic protective equipment, such as helmets, gloves, or personal floatation devices, and hindered aspects of the animal rescue operation [12].



Figure 1. US military assists with appropriate protective equipment for flood response during the Hurricane Harvey response (photo credit: Wharton City Police Department).

In one small city, the Department of Homeland Security (DHS) deployed an Urban Search and Rescue (USAR) team to clear the flood-affected residential area. The city's emergency manager was not

consulted over their self-deployment and the team was escorted around by DHS officials overtly armed with automatic rifles. This was not well received by the local community. The team applied the FEMA search marking system, however in direct observation as provided through a tour of the flood-affected area, those markings appeared to be incomplete. Such non-compliance of USAR search markings by specialist teams has been observed in other disasters, such as the Canterbury 2011 earthquake [13,14].

According to one respondent “the Cajun Navy did a good job, but was a problem” and that this group, along with other organizations from outside the county, allegedly acted outside the emergency management system, illegally entered properties, took animals from flood-affected properties with no reunification plan, contributed to disease outbreaks (such as parvovirus) due to a lack of understanding local veterinary health issues, had no record keeping and took animals out of state never to be reunified with their owners. One respondent summed up their frustrations in saying “So in (Hurricane) Harvey if you were missing a pet it was with Harris County Animal Control, Houston SPCA, Houston Humane Society or stolen by some dude on a boat”. Yet another respondent said that the Cajun Navy had the benefit that it had “no red tape” meaning it flaunted the need for insurance or worry about jurisdictional issues or other restrictive policies. The issue of spontaneous animal volunteer groups often working outside the emergency management system and/or creating challenges in response has been well documented as an issue [5,7,15–18].

In a rural county, flood-displaced and evacuated horses were corralled and there were instances of people turning up purporting to be the owner (disaster rustling) as without microchipping or other forms of identification it was difficult to establish ownership of the animal. According to one respondent in this county’s large animal evacuation centre, a volunteer took the initiative of telling people purporting to be the owner reclaiming their horse “that if this was not their horse, it was a felony offence and he made sure he took a photo of them, the horse, and their identification so he could pass it onto law enforcement if required”.

Evacuation failure associated with animal ownership has been well researched. Though evacuation failure observations are outside the scope of this study there is strong evidence across the literature that the evacuation of companion animals alongside their human guardians positively affects public safety, including that of the animal owners and emergency responders [19–26]. Research on evacuation failure has been well articulated with Heath and Linnabary’s statement that “there is no other factor contributing as much to human evacuation failure in disasters that is under the control of emergency management when a threat is imminent as pet ownership” [27].

3.4. Media

The media portrayal of Hurricane Harvey was much more positive than that of Hurricane Katrina with an outpouring of public support rather than public outcry. Many public figures such as the US President Donald. J. Trump giving the Houston Humane Society a personal donation of US\$25,000 [28], singer and songwriter Amanda Lambert, who co-founded the animal welfare charity Mutt Nation Foundation, responded to the affected area to help empty local animal shelters to create space for flood-displaced animals [29]; and even an Australian all-male review group based in Las Vegas were in town and volunteered their time bathing and walking flood-affected animals while also making a US\$5000 donation to the Houston Humane Society [30].

Barnes et al. found that during and following Hurricane Katrina, the media were more likely to portray the efforts of individuals and non-profits in a more positive light, than the efforts of government and for-profit businesses [31]. Although, anecdotally, the overall media coverage during Hurricane Harvey was more positive than during Hurricane Katrina, the positive coverage of individual and non-profit group efforts appeared to, again, be given more attention than the issues or performance of government and for-profit organizations.

3.5. Donated Goods

Hurricane Harvey demonstrated the generosity of Americans with an overwhelming deluge of donated goods to animal charities helping in the response. One respondent said, “thank God we have a warehouse” and “It’s a good thing, but it’s like another disaster” referring to the excessive volume of donated goods which also became a distraction to providing a response. At one point, one animal shelter had five to six FedEx trucks permanently clogging throughout the day to drop off donated goods for up to six days, leading to the police visiting due to the traffic congestion caused by the donations. In another example, a comment on social media asking for peanut butter for enrichment toys resulted in a major flood of donated peanut butter and the post was taken down.

The repeated experiences of excessive donations of goods that are often inappropriate, used, or expired are well-documented [27,32–34] and it would appear, again, as the lessons of the past have not been learned. This lack of lesson learning is not unique to Hurricane Harvey or the animal emergency management sector, as it is a challenge globally and there is yet to be a well-developed lesson learning system, as, at best, most current models are over-simplified and lack an evidence-based dynamic doctrine approach which allows for real-time incident management adjustment [35]. The World Organisation for Animal Health (OIE) guideline on disaster management also recommends that animal disaster management programmes incorporate a “lessons learned” system [36], though the term may be a misnomer given these are more likely to be a “lessons identified” system.

3.6. Service Animals

One of the key characteristics of the PETS Act because of the experiences in Hurricane Katrina was the specified inclusion of service animals, those used to assist people with disabilities. Respondents all reported that there were no known issues with service animals during Hurricane Katrina. However, service animal users were not interviewed, and further research would be needed to substantiate the assumption that there were no issues.

3.7. Reunification

Following Hurricane Harvey, the lack of standardized and centralized displaced animal forms and databases respectively for animal emergency management continue to be problematic as experienced over a decade since Hurricane Katrina. Microchipping is not common in Texas according to many respondents and the fragmented nature of animal groups in the US meant in the respondent’s opinion that the development of a standardized form or database for displaced/evacuated animal information was “never going to happen” as there are too many organizations that would have to agree. Again, the US is not alone with New Zealand also having faced the same animal information and data challenges in the Canterbury 2010 earthquake [37] and the Edgumbe 2017 floods [12].

Animals that came into the care of one major animal welfare charity in Houston were held for 30 days, which was a variation of the normal legal requirement of three days. This was consistent with the American Bar Association’s [38] recommendation of 30 days post-disaster animal holding periods. Some other organizations did not extend their holding periods, with some only holding for ten days according to one respondent.

Post-disaster community clinics were provided by major animal welfare charities including free vaccinations, heartworm tests and microchipping. One such clinic expected 300 animals, but over 1500 animals were presented, requiring many to be given vouchers to come back another time.

One major animal welfare charity in Houston also launched “Operation Reunite” that enabled over 300 displaced animals to be placed in veterinary clinics as fosters instead of being housed in traditional temporary animal shelters; and developed a webpage “that would allow pet owners needing a temporary foster home for their pets to connect with potential foster homes and select the best fit for them” [24].

3.8. Other Legal Issues

In addition to disaster rustling, illegal rescues and animal holding periods, there were many other legal observations. Of those respondents that were interviewed, many had a general or animal-specific law enforcement role, directly or indirectly as part of their organisation's mandate. Many confirmed that there were acts of abandonment that required to be investigated. However, the use of the Texas Health and Safety Code [39] appeared effective, specifically section 821.077 that prohibited the "unlawful restraint of a dog". This Texan code makes it illegal to tether a dog outside in extreme weather or when a Hurricane warning is in effect. This was reflected by Roman City Forest Police Chief Stephen Carlisle gaining the attention of international media by quoting "I promise you that I will hold anyone accountable that unlawfully restrains their dog" [40] in the lead up to Hurricane Harvey.

One animal welfare charity who undertakes humane law enforcement also under-covered a major animal hoarding abuse case. Though the method of detecting the offending has been kept in confidence to preserve the pending investigation, it would appear from an interview with a respondent involved in the investigation that animal hoarders used the disaster as an opportunity to re-stock their animal numbers. With the urgent need to clear existing animal levels within animal shelters to make room for disaster-displaced animals, the abundance of displaced animals and the over-supply of donated cages available to the public to assist with evacuations, these conditions are ripe for disaster hoarding to occur. It may well be that Hurricane Harvey has exposed the first empirical case of disaster hoarding which may further highlight the need for animal law enforcement agencies to strategically prioritise animal emergency management as a core function.

4. Future Work

The limited number of respondents interviewed may limit the findings of this study. Further research is needed on a larger scale to survey a wider sample of animal emergency responders, including those from out of state and those who were from spontaneous volunteer groups, such as the Cajun Navy.

The potentially novel case of observed disaster hoarding along with other acts of disaster animal abuse may be indicative of crimes that have traditionally been out of scope or view for researchers and the interaction between disasters and animal abuse may create new sub-disciplines within the constantly-evolving niche subject of animal emergency management.

5. Conclusions

In the twelve years since the introduction of the PETS Act, the United States has culturally made the preservation of companion animals in disasters a priority. Though there is some evidence to suggest the PETS Act has contributed to this cultural change, the implementation of animal emergency planning appears sub-optimal and the integration of animal welfare charities to respond effectively remains fragmented in many areas. Hurricane Harvey repeated many of the challenges observed in previous emergency events including Hurricane Katrina, from overwhelming donations of goods, lack of coordination, unreasonable abandonment, lack of common reunification systems, inter-organizational tensions, and lack of preparedness. This, however, is no different from many other countries, including New Zealand, and this reinforces the need for improved lesson learning systems and for the animal emergency management community to collaborate more on an international level.

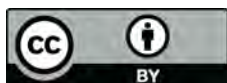
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Shooting them isn't the answer...
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5-7 May 2014

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Abstract

With over 44% of those failing to evacuate during Hurricane Katrina doing so in part because they were unable to take their pets, the issue of pets in disasters has become a major issue and focus for emergency managers worldwide. The academic consensus is that pets are seen as part of the human family and that leaving them behind in an evacuation is contrary to public safety. This paper explores the human-animal bond and the implications of this for emergency managers and responders through an assortment of literature and media articles, providing the basis for taking an evidence based approach to companion animal emergency planning. Finally, a short commentary is offered on the development of the Civil Defence Disability Assist Dog tag in New Zealand and its benefits for the community and emergency response organisations.

Keywords Pet, animal, disaster, evacuation, emergency management, disability, tag.

With most Australians and New Zealanders owning pets, it is no wonder we find the issue of pets in disasters highly emotive and topical. The human-animal is extremely powerful in an emergency management context, both in creating opportunities to enhance public safety, but also a major risk if pets are not included in emergency management arrangements.

The human-animal bond is frequently illustrated in the media and by the examples in our day to day lives. Most emergency responders are pet owners too and can understand that companion animals are seen as family members, with confirmatory surveys finding close to 100% of pet owners seeing their animals as part of their family (Irvine, 2009; Glassey, 2010).

But even the most hardened heroes are found to be compassionate toward animals, even in major disasters and crises. In Australia, who can forget the photograph of David Tree, a County Fire Authority Firefighter giving a drink of water to an injured Koala bear during the 2009 bushfires? That same year in New Zealand a gunman took the lives of two police officers in a crisis known as the Napier Siege. Despite the uncertainty that the offender, Jan Molenaar was still alive, armed police re-entered the hot zone to retrieve police drug dog "Fi" who was thought to be dead from her handler's vehicle outside the gunman's address. Armed police during the operation also undertook covert missions to feed the pets of surrounding properties after evacuated pet owners raised their concern (TVNZ reporter, personal communication, 2010).

But it has taken some time and some hard lessons for the emergency management sector to take the issue of pets in disasters seriously. Many of the best practices in companion animal emergency management stem from Hurricane Katrina. In August 2005, Hurricane Katrina struck the Gulf Coast of the United States of America. In its wake, it left US\$110 billion in damage and 1,836 people dead making it the third deadliest disaster in US history. This disaster also highlighted the importance of companion animal emergency management with over 50,000 pets being left behind during the evacuation of New Orleans and 80-90% of these pets perishing (Anderson & Anderson, 2006; Shiley, 2006). What was anticipated to be over within a few days turned into a disaster beyond comprehension and triggered the largest animal rescue operation in US history – an operation that rescued approximately 15,000 pets supported by some 5,000 volunteers (Shiley, 2006). Prior to 2005, it was FEMA policy that pets should be left behind during evacuations – this has now been completely changed with the introduction of Pets Evacuation & Transportation Standards (PETS) Act. The single most compelling fact for emergency managers to learn from Katrina was that approximately 44% of the people who did not evacuate for Hurricane Katrina stayed, at least in part, because they did not want to leave their pets behind (Fritz Institute, 2006).

Though there may be a legal power to evacuate people without their pets, from an evidence based approach to emergency management, let alone a moral obligation – pets need to be evacuated along with their other family members. Even Oprah Winfrey typifies the public opinion that owners will generally not evacuate if unable to take their pets (Oprah Winfrey Network, 2011) and according to the classic works of Auf der Heide (1989), emergency planning should be based on “likely behaviours” not “correct behaviours” – that is we should plan on how communities are likely to act, not how we want them to act.

If we take a vulnerability approach to animal emergency management emergency management, companion animals are the least vulnerable when contrasted to laboratory animals and intensively farmed animals (Irvine, 2009). In the 2010 Darfield (Canterbury) earthquake over 3,000 animals were killed (Glassey & Wilson, 2011). In September 2000, several tornados destroyed twelve battery farming sheds outside of Croton, Ohio. Over one million birds were trapped in mangled cages (Irvine, 2009). So despite pets being the least zoologically vulnerable, specific legislation namely the PETS Act was passed in the US following Hurricane Katrina. Pets are an emotive issue because of the human-animal bond, in effect each pet is bonded to a voter – pets in disasters is political, hence the landslide passage of the PETS Act with 349 to 29 votes in the US House of Representatives.

The PETS Act has specific provisions that mandate emergency planning to incorporate the rescue and care of pets and service animals, it creates funding mechanisms to assist with such planning and response, and obligates the rescue and care of pets and service animals in an emergency. No such specific legislation exists in New Zealand or Australia. We can learn the lessons the easy way or the hard way from Hurricane Katrina – there are many reasons why the PETS Act was passed and related programmes resourced. Simplistically put, saving pets equals saving people.

Do we really apply an evidence based approach to emergency management in Australasia, or do we only do so when it suits? So what is the evidence behind companion animal emergency management? And how can it convince ourselves, our peers and community leaders to take this issue seriously?

There is academic consensus that pet owners are more likely to refuse to evacuate if they are required to leave their pets, placing them and public safety personnel at risk (Anderson & Anderson, 2006; Basler, 2006; Edmonds & Cutter, 2008; Health 1999, Irvine, 2009; Leonard & Scammon, 2007; Shiley, 2006). Locally, the Queensland Times (2010) ran an online poll and found that 60% of Queenslanders would not evacuate if they could not take their pets.

Even if pet owners are forced to leave their pets behind (as in Hurricane Katrina, Napier Siege and many other emergencies), pet owners are likely to become determined to re-enter evacuated areas to reclaim their pets, despite advice of public officials – putting themselves and public safety personnel at risk (Heath, 1999; Irvine, 2009; Nolen & Rezendes, 2006; Williams, 2006). In a survey of New Zealand pet owners, 58% of respondents indicated they would likely return to rescue their pets if left behind, despite advice from public safety officials (Glassey, 2010). In the 1997 Yubba County Flood event, 80% of those who re-entered the evacuation zone without authorisation, did so to reclaim their pet (Heath, 2001).

And when pet owners do evacuate with their pets, they provide a pre-existing and strong psychosocial support mechanism with over 63% of surveyed pet owners identifying their pets as an important coping tool during times of stress (Glassey, 2010). By forcing pet owners to leave their pets in a disaster, pet owners are more likely to be psychologically impacted (Edmonds & Cutter, 2008; Hunt et al, 2008; Heath, 1999; Gerwolls & Labott, 1994). So we are actually harming our communities by not evacuating pets and putting their safety, along with the safety of our front line personnel at risk.

Many emergency management organisations have key performance indicators to reach around public preparedness. Being pro-active with companion animal emergency management is likely to improve community preparedness levels with pet owners being more likely to take preparedness measures that will benefit their pets than they are to protect themselves. (Leonard & Scammon, 2007; Selbert, 2002).

Pre-planning should address the issue of response capacity including spontaneous volunteers. Spontaneous animal rescue volunteers can both impact positively and negatively on response and recovery operation (Anderson & Anderson, 2006; Shiley, 2006). In Hurricane Katrina over 5,000 volunteers from across the country deployed

(including self-deployed) to the disaster affected area. Some of these volunteers were well trained, part of formal emergency response systems with specific training in animal and disaster response. Others were not so well prepared logistically, psychologically or physically. In the Mike Shiley film *Dark Water Rising* (2006), spontaneous volunteers are shown looting, drinking excessively and psychologically exhausted. Anderson and Anderson (2006) also provide evidence of some spontaneous volunteers removing dog collars and identification in the belief that the animal's owners did not deserve to have the animal back after abandoning it. Accredited animal rescue teams are required, just as animal control officers are not Firefighters, rescue professionals are generally not animal specialists. An accredited capacity is needed and through the work of John Haven from the University of Florida, the National Fire Protection Association has added a new chapter on animal rescue to the NFPA Standard on Technical Rescue Operations and Training (NFPA1670. 2014 edition).

In a propane carriage derailment in Weyauwega, Wisconsin (1996), the entire town population of 1,700 people were evacuated and pets were not. Within 4-5 days 50% of owners had attempted to illegally re-enter the evacuation zone to rescue their pets and frustrated with the lack of action by local emergency services, a bomb threat was made to the Emergency Operations Centre (Irvine, 2009). The take away from this conference is that leaving pets behind during an evacuation is not okay. Pet owners feel strongly toward their pets. Don't underestimate what lengths they will go to, to save their pet. A bomb threat to an EOC will ruin any emergency managers day.

Finally, I take the opportunity to share some good news arising from lessons learned from the Canterbury earthquakes. Traditionally, there has been only a few and quite distinctive disability assist dogs such as for those assigned to the blind as guide dogs. Today, there are genuine disability assist dogs for those members of our communities who are impaired with deafness, autism, epilepsy and anxiety disorders – these dogs come in all shapes and sizes now. The unfortunate by-product though is a loss of identity for disability assist dogs making it easier for pet owners to purport or impersonate that their dogs is service animal so they can enjoy access rights to public places and transportation, when in fact it is just a much loved pet. Certainly the in USA, there is a growing problem of fake service dogs, with identification vests available without question on the internet (Warren, 2014). In New Zealand, this has also happened, but not to the same extent – yet. However, in my previous role as the Chair of the National Welfare Coordination Group (General Manager,

Emergency Management, Ministry of Social Development), I led a project based on the research undertaken by myself and Dr Thomas Wilson (2011) which highlighted the need for bona-fide Disability Assist Dogs to be easily identified in an emergency. The result was the development of the Civil Defence Disability Assist Dog tag (figure 1), which by using the Civil Defence logo became nationally recognised and protected from misuse under the Civil Defence Emergency Management Regulations 2003 (as the logo has statutory protection). Over 200 disability assist dogs in New Zealand are now eligible for the world's first disaster identification tag for service animals which will result in rapid reunification of disability assist dogs should they become separated from their handler, as well as making it easier for evacuation centre and emergency service personnel to identify legitimate service dogs in future emergencies. The dog exemplifies how research and taking an evidence based approach to companion animal emergency management can save the lives of people, through protecting pets and service dogs.



Figure 1: Disability Assist Dog Civil Defence tag. (Source: Ministry of Civil Defence & Emergency Management).

By applying the evidence and lessons from this presentation emergency managers can save shooting themselves in the foot, by taking a positive and grounded approach to companion animal emergency management.

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A critical evaluation of the companion animal disaster management framework in New Zealand

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PhD by Publication Portfolio

Appendix 2: Co-Authored Publications

September 2022

ABSTRACT

When earthquakes and other natural hazards strike, it is not only humans that can become trapped in collapsed structures. This paper details current international practice of structural search markings used after disaster events. It also explores developing search markings to include markings for animals so that rescuers also take note of the presence and status of animals rescued from the location. Historically, companion animal owners have been known to consistently breach cordons to search for their animals. Currently, disaster search marking systems do not accommodate the rescue status of animals being removed or that are still trapped. An animal-specific search marking system is recommended and decision makers within search marking bodies should consider adoption or development of such marking systems. The availability of an animal search marking could reduce confusion during human-focused rescue efforts and contribute to the legitimisation of technical animal rescue as an independent discipline.

Standardised search markings to include animals

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Introduction

The International Search and Rescue Advisory Group (INSARAG) is established under the United Nations. The group oversees guidelines and minimum standards for urban search-and-rescue teams involved in international responses to earthquakes. One of the key outputs of this group is the production of methodologies, including a standardised marking system, to indicate that structures have been searched. These markings indicate the location, or potential location, of victims buried in collapsed structures.

There is a growing trend that animals are becoming an issue for search-and-rescue activities. Because search and rescue is an urban discipline that is focused on structural collapse response, teams often come into contact with animals, particularly companion animals, that also need to be rescued. This is in line with increasing public expectation and, in some cases, legal requirements.

INSARAG markings

INSARAG markings have undergone several revisions in the past few years, notably dropping the structural assessment marking (Figure 1) in favour of the worksite marking (Figure 2) and re-introducing the victim marking system (Glassey 2014). However, the current INSARAG victim marking system is not consistent with the Federal Emergency Management Agency (FEMA) equivalent marking system and irregularities include team identification and 'all victims removed' indication.

FEMA markings

The United States of America (USA), emergency services organisations do not subscribe to the INSARAG search marking methodology when operating domestically. Instead, they use USA-specific structures and hazards marking (Figure 3) and the search assessment marking system (Figure 4), as determined by FEMA.

In the USA, the FEMA structures and hazard marking is placed on the outside of damaged structures to indicate that the building has been assessed as at either low, medium or high risk of collapse. This is denoted with either no internal line, one diagonal line or two diagonal lines forming a cross, respectively. For example, in Figure 3, a structure has been assessed as at



Figure 1: Former INSARAG Structural Marking (United Nations 2006).



Figure 2: INSARAG Worksite Marking (United Nations 2015).

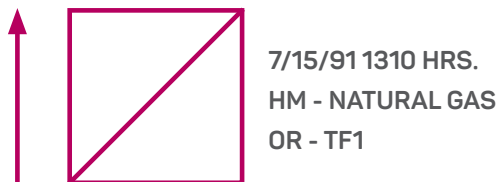


Figure 3: FEMA Structures and Hazards Marking (US Army 2016).

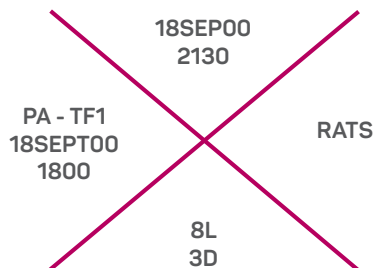


Figure 4: FEMA Search Assessment Marking (FEMA 2006).

medium risk of collapse by New England Task Force 1 on 28 June 2003. The marking also notes a hazardous material risk of natural gas. An arrow shows the direction to the safety point of entry to the structure (US Army 2016).

The FEMA search assessment marking (Figure 4) is placed on the street-address side of the building. The marking has a diagonal line with a team identifier (i.e. PA-TF1) and date and time of entry is added in the left quadrant. Hazards are noted in the right quadrant. When leaving the structure, the date and time of exit is updated and a second diagonal line is added (to create a cross). Information about any people deceased (D) and living (L) who were removed from the structure are indicated. Other minor variations for this marking are used in reconnaissance of structures where a search is not carried out (US Army 2016).

Including markings for animals

Under the USA National Incident Management System (NIMS), response team capability (also known as team typing) and position requirements are specified, now include technical animal rescue. Additionally, requirements to have credentialed animal-rescue personnel was reflected in the 2014 edition of the National Fire Protection Association (NFPA) standard on technical rescue, with animal rescue being legitimised as a new chapter and discipline within this consensus based standard (NFPA 2014). Both the NFPA and NIMS requirements for urban search and rescue responders require such operators to understand the national protocols for searching for people in collapsed structures.

Following Hurricane Katrina in 2005, the USA passed a federal law known as the *Pet Emergency and Transportation Standards (PETS) Act of 2006* that made provisions for the rescue, care and accommodation of companion animals rescued during emergency and disaster events. Federal funding covers the costs of companion animal rescue undertaken by urban search and rescue teams within the USA. It is the norm for urban search and rescue (USAR) teams to be actively involved in the rescue of companion animals (Fugate 2019).

In other countries such as Australia and New Zealand, the INSARAG marking systems are adopted. However, an analysis by Glassey (2013) showed their use and meaning were not well understood by users nor within the emergency management sector.

Search markings confusion

In April 2017, the town of Edgecumbe in New Zealand (population 1700) was flooded when flood-protection walls failed. Responders and the local community worked quickly to evacuate the entire township but approximately 1000 animals were left behind in the

cordoned area that contained roughly six-hundred houses. As no humans remained in the evacuated area, animal rescue teams (supported by volunteer response teams) carried out a massive operation to rescue the stranded animals. They applied the INSARAG rapid clearance marking (Figure 5) that requires the marking to be 'applied in the most visible/logical position on the object to provide the greatest visual impact' (United Nations 2015, p.90). The INSARAG rapid clearance marking was used to expedite search progress and minimise the damage to property left by marking.

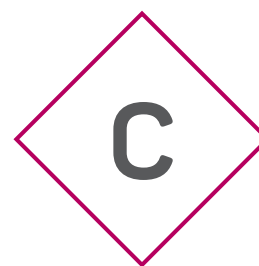
However, local civil defence authorities did not understand the meaning of the marking and incorrectly advised community members that the 'C' in the diamond meant the structure was 'primarily condemned' (Stuff 2017) when, in fact, the marking showed the structure was 'clear' of victims. A corrective public announcement was subsequently issued (Glassey 2017). In addition, some of the markings applied were not compliant with the INSARAG guidelines, with some rapid clearance markings incorrectly marked with a 'C' in a triangle.

The application of markings is an emergency power under Section 92 of the New Zealand *Civil Defence Emergency Management Act 2002* and is protected under Section 110. However, the permanent markings caused damage to properties and angered some property owners. In the New Zealand Society for the Prevention of Cruelty to Animals (SPCA) report (Glassey 2017), it was recommended that a Low Damage Marking (LDM) system be used for future responses, consistent with earlier recommendations (Glassey 2014). The LDM system provides an alternative to permanent markings such as adhesive labels and waterproof paper stapled to structures. An added benefit of using alternate methods such as label sheets or placards is that they do not create fumes found in aerosol paints. Such paints can adversely affect search dogs undertaking their search activities (US Army 2016, p.25).

Other animal response organisations such as Animal Evac New Zealand produced their own LDM system due to the lack of existing marking systems for structures in regard to animal rescue (Figure 6).

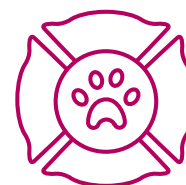
Confusion around search marking systems also occurred during an EF-5 tornado in Greensburg, Kansas in 2007. During this event, it was observed that some responders marked structures clear of victims with a 'V', denoting it was 'vacant'. This conflicted with the FEMA victim marking for an unconfirmed victim location.

These examples suggest that work is needed to educate response personnel on disaster marking systems used in their respective countries. It also suggests that better alignment is required of marking systems between FEMA and United Nations systems.



TEAM ID
DATE

Figure 5: INSARAG Rapid Clearance Marking.



AENZ -

CLEARED OF LIVE ANIMALS
ANIMALS RESCUED

Figure 6: Animal Evac NZ Rapid Clearance Marking (Glassey & Andrews 2018).

Why animal rescue affects human rescue

A growing trend in urban search and rescue is the consideration of animals, in particular companion animals that are left behind during evacuation or in disaster-affected areas. Studies have highlighted the actions of pet owners who illegally enter or attempt to illegally enter cordon zones to search for and rescue their animals (Day 2017, Glassey & Wilson 2011, Heath 1999, Taylor *et al.* 2015, Travers, Degeling & Rock 2017, Whittaker & Taylor 2018). Of owners who leave their pets behind, 50–70 per cent are likely to attempt to return to rescue them (Heath 1999). In the 2017 Edgumbe flood, 54 per cent of pet owners attempted to rescue their animals and 33 per cent illegally breached the cordon area, mostly to rescue their pets and/or retrieve medications (Glassey 2018).

In the context of urban search and rescue incidents, there have been cases of animal owners returning to



Specialist animal rescuers evacuate pets during Hurricane Harvey near Texas in 2017.

Image: Eric Thompson

earthquake damaged structures to save their animals. In the Haiti earthquake in 2010 that caused over 100,000 human deaths, animal owners returned to collapsed structures to search and to rescue their pets (Sawyer & Huertas 2019). This was also the case in 2011 following the earthquake in Christchurch, New Zealand (Potts & Gadenne 2014). This demonstrates the protective behaviour of animal owners that occurs.

The phenomena of pet owners illegally entering a disaster zone highlights the risks such owners are willing to take to protect their animals. As such, unaccountable and untrained members of the public within the cordon place their own safety at risk or risk the safety of rescue and security personnel who may have to intervene to remove them.

In the Edgumbe floods, a woman was refused entry at the cordon to access her horse. In defiance, she swam across the flooded river unbeknown to safety officials. In effect, the cordon, which was meant to protect human life, negatively influenced this person to put her life at risk. To reduce such behaviour, responders carrying out door-to-door searches in the aftermath of the flood recovered deceased pets and passed them on to the local animal shelter to identify and reunite them with their owners. This removed the motivation of evacuated residents to return to find their pets. The early return of these animals to their owners before extensive degradation of the bodies minimised emotional harm to pet owners.

Animals left behind and trapped in collapsed structures may also create false flags for electronic and canine search teams. False alerts from trapped animals distracts human rescuers at a time when expeditious location and retrieval of people trapped is paramount. Addressing the issues of animal rescue improves the search and rescue of humans.

Recommendations

The lack of animal-inclusive search markings has been recognised as an issue for some time, both at the international level and within the USA (Glassey 2010, 2017). The lack of animal-inclusive search marking protocols has resulted in an animal-specific disaster search marking (Figure 7) for houses and structures by the Animal Search and Rescue (ASAR) Best Practice Work Group in the USA and is promoted by experts such as Green (2019). The marking is not issued or approved by FEMA, NFPA nor INSARAG but it provides a starting point to promote a common marking system to prevent confusion in the absence of direction on whether disaster search markings can be used for animal search-and-rescue or disaster response groups. However, the marking system is not universally accepted, it conflicts with historical INSARAG symbology and creates another marking system for responders to recognise and understand. Organisations such as FEMA, NFPA and INSARAG have an opportunity to include animal rescue elements in their existing marking systems, which will assist interoperability.

The ASAR animal search marking is a draft marking system for animal search and rescue as set by the International Technical Rescue Association (ITRA). The revised Animal Search Marking (Figures 8 and 9) is aligned to the former and discontinued INSARAG Search Assessment Marking. The key revision is that the outsides of the primary shape are not species-specific but indicate the rescued-alive, rescued-dead or remain (dead or alive) status of animals at the site. The circle around the primary shape in either the ASAR or ITRA Animal Search Marking and indicates that animals remain on the site or that the site was not fully searched and may require another team with additional capability to undertake the animal rescue or recovery. The horizontal

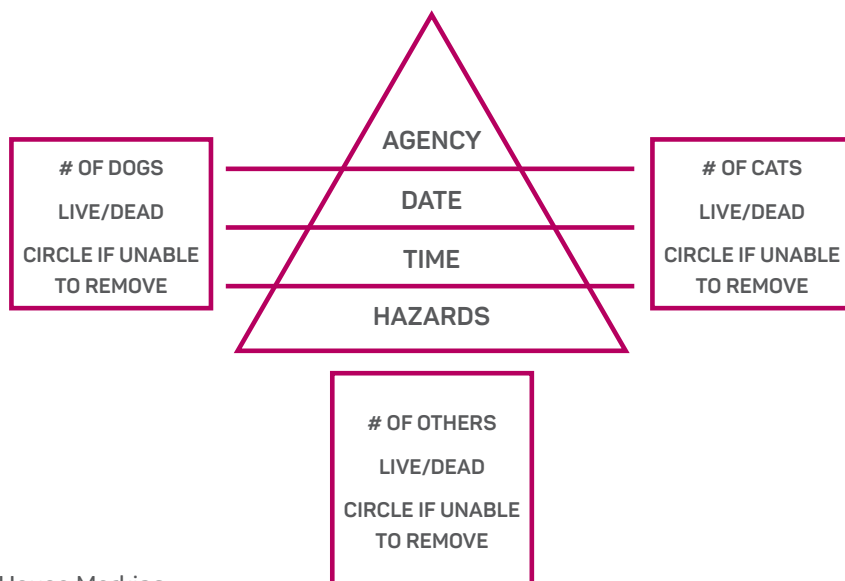


Figure 7. ASAR House Marking.

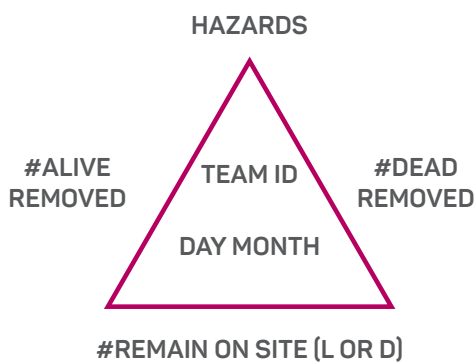


Figure 8. Proposed ITRA Animal Search Marking.

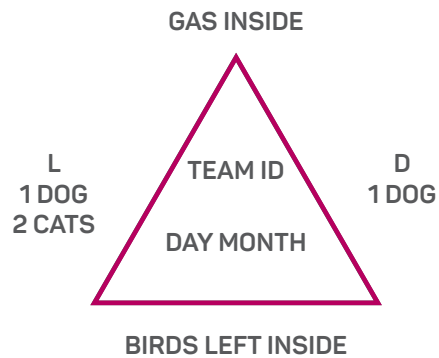


Figure 9. Draft ITRA Animal Search Marking.

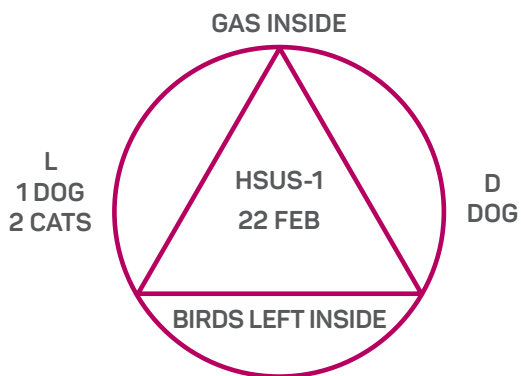


Figure 10. Draft ITRA Animal Search Marking denoting animals remain.

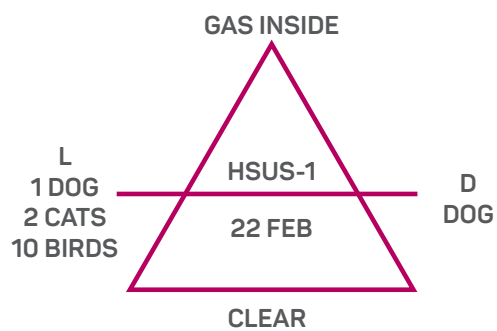


Figure 11. Draft ITRA Animal Search Marking denoting all animals removed.

line through the primary shape (Figure 11) indicates that all animals, both alive and deceased, have been removed from the site.

It is recommended the revised Animal Search Marking be adopted or be considered for further refinement by authorities including FEMA and INSARAG.

Conclusion

As greater emphasis is placed on the life of animals (in particular, companion animals) during emergencies and disasters, those leading urban search-and-rescue operations need to evolve search methodologies to reflect public expectations. Moving from a 'human life first' to 'saving pets, saves people' mentality will improve public confidence during future responses and minimise the compromised safety of pet owners. The introduction of an internationally recognised and interoperable animal search marking system will help with human and animal rescue symbology. This will require leadership and an inclusive approach to urban search and rescue at national and international levels.

There will be advantages in working towards an integrated response between animal rescue responders and USAR (human rescue) operatives given that animal rescue responders are often trained in human rescue and first-aid. Animal rescue responder capacities would act as a force-multiplier to expedite search efforts, reduce the duplication of searches and, ultimately, minimise public anxiety. Animal rescue would benefit from a standardised search marking system to avoid the proliferation of non-universal symbology that would lead to confusion and challenge search efforts.

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Animal welfare impact following the 4 September 2010 Canterbury (Darfield) earthquake

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Abstract

At 4.35am on Saturday 4 September 2010, a magnitude 7.1 earthquake struck near the township of Darfield in Canterbury leading to widespread damage in Christchurch and the wider central Canterbury region. Though it was reported no lives were lost, that was not entirely correct. Over 3,000 animals perished as a result of the earthquake and 99% of these deaths would have been avoidable if appropriate mitigation measures had been in place. Deaths were predominantly due to zoological vulnerability of birds in captive production farms. Other problems included lack of provision of animal welfare at evacuation centres, issues associated with multiple lost and found pet services, evacuation failure due to pet separation and stress impact on dairy herds and associated milk production. The Canterbury Earthquake has highlighted concerns over a lack of animal emergency welfare planning and capacity in New Zealand, an issue that is being progressed by the National Animal Welfare Emergency Management Group. As animal emergency management becomes better understood by emergency management and veterinary professionals, it is more likely that both sectors will have greater demands placed upon them by national guidelines and community expectations to ensure provisions are made to afford protection of animals in times of disaster. A subsequent and more devastating earthquake struck the region on Monday 22 February 2011; this article however is primarily focused on the events pertaining to the September 4 event.

Key words: Canterbury, Darfield, earthquake, emergency, pets, animals, welfare, disaster, New Zealand.

Introduction

Animal welfare during a disaster has emerged as a critical component of modern emergency management. Many companion animals are considered part of the family and livestock are a primary source of income for many rural businesses. The strong emotional and financial bonds to these animals can result in humans endangering their own safety to save their animals during disaster events. Endangering actions include refusing to evacuate and leave their animals and/or trying to re-enter an unsafe area to rescue or tend to their animals (Glassey, 2010; Heath, 1999; Irvine, 2009). The impact of losing valued animals can also lead to psychosocial effects on humans following the disaster, reducing or delaying their ability to cope and ultimately recover (Hall, et al., 2004; Hunt, et al., 2008). In an online survey of Taranaki and Wellington pet owners, Glassey (2010)¹ reported that more than 63% of respondents (n=92) identified their pet as an important coping mechanism during times of stress and that 99% of the respondents also identified their pet as part of the family. Ninety one percent of respondents also wanted to be involved in the continued care of their pet if evacuated. Reputations could suffer if an individual, company or nation is perceived to be mistreating animals following a disaster, which could extend to financial impact. Thus, the treatment of animals during a disaster is also a significant issue for emergency management, which goes beyond basic animal rights.

This paper seeks to provide a preliminary analysis of impacts on animal welfare following the 4 September 2010 Canterbury earthquake. The scene is set with a brief review of relevant planning for animal welfare during disasters in New Zealand. Several key international case studies are analysed to identify lessons on relevant issues and give insight to potential problems which may develop during future disasters. Lessons for veterinarians and other relevant stakeholders are then presented. This paper does not consider the 22 February 2011 Christchurch earthquake. However, many more people were displaced and homes destroyed. Media

¹ This survey was part of a Master of Emergency Management research report to develop recommendations to enhance companion animal emergency management in New Zealand.

and anecdotal reports at the time indicated the loss of companion animals was a significant issue. Analysis of this event will provide rich data for future research into animal emergency welfare.

Animal emergency management arrangements in New Zealand

The framework for Civil Defence Emergency Management (CDEM) in New Zealand is established in the Civil Defence Emergency Management Act 2002. The act is based on Norton's² dispersed accountability model (Figure 1) that places emphasis for local government to facilitate community level disaster resilience, rather than provide a top down *command and control* environment. Local government is responsible for establishing a Civil Defence Emergency Management Group that is comprised of the regional council and respective local territorial authorities (Section 12, New Zealand Parliament, 2002). Regional CDEM Groups are responsible for the application of comprehensive emergency management, that being reduction of risk (mitigation), readiness, response and recovery – also known as the four R's. CDEM Groups are also required to develop an emergency management plan that is consistent with the National Civil Defence Emergency Management Plan. Group plans provide information on hazards as well as roles and responsibilities of local partners to the plan. Together with the associated guide outline (Glassey, 2010), plans identify that local territorial authorities are responsible for companion animals during an emergency supported by the Society for the Prevention of Cruelty to Animals (SPCA). Large and small animals are the responsibility of their respective owners; obligations under the Animal Welfare Act 1999 to afford appropriate care and attention remains during a declared state of emergency (Glassey, 2010). In the National Civil Defence Emergency Management Plan and Guide, the Ministry of Agriculture and Forestry (MAF) provides overall coordination and monitoring of issues relating to domestic animals at a national level. In 2006 the National Animal Welfare Emergency Management Liaison Group (NAWEM) was established as a cluster of agencies for the purpose of providing advice on animal welfare issues during emergencies through individual and multi-agency action. NAWEM was formed in response to adverse events that highlighted significant

regional variation in local community's ability to cope, and the need for heightened national coordination among relevant agencies³ (H. Squance personnel communication 2010). The NAWEM Liaison Group is co-chaired by the New Zealand Veterinary Association and the World Society for the Protection of Animals. The group also includes representatives of MAF, Federated Farmers, SPCA, Massey University, Ministry of Civil Defence and Emergency Management (MCDEM); New Zealand Companion Animal Council (NZCAC) and Local Government (through the New Zealand Institute of Animal Control Officers). NAWEM operates on minimal funding, with all agencies providing in-kind support to progress the NAWEM mandate. One of the current projects being undertaken by NAWEM is the publication of a Companion Animal Emergency Planning Guideline which is due for release in 2011. Currently, there is no statutory requirement for CDEM Groups to ensure animal welfare is considered in their emergency plans and the Groups are only slowly accepting the consensus of scholars that protecting companion animals, in turn protects their human guardians. Authorities in Taranaki, Taupo, Rotorua and Wellington are now championing efforts in this area – however other areas' progress is limited or non-existent, as is not seen as a priority to decision makers or insufficient resources hinder further development. Without a statutory mandate such as a Directors Guideline, it is difficult to expect local authorities to expend ratepayer funds to establish adequate plans and capabilities to manage animal welfare during emergencies.

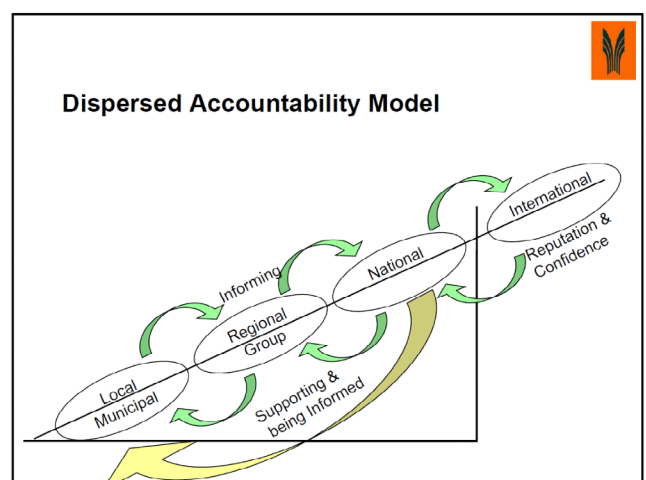


Figure 1: Norton's Dispersed Accountability Model (Angus, 2005).

² John Norton was the Director of Civil Defence, Ministry of Civil Defence & Emergency Management, New Zealand for eight years ending in June 2006.

³ NAWEM was founded Dr. Ian Dacre (H. Squance, personal communication, 2011)

Experience From Elsewhere

Hurricane Katrina

In 2005 the impact of Hurricane Katrina on New Orleans and the Gulf Coast led to the largest natural disaster to affect a developed country. During the disaster, one of the largest organised human evacuations in history occurred, with over 1 million people evacuating from New Orleans before the arrival of Katrina. However, a large number of people (estimated over 100,000) did not evacuate resulting in significant societal consequences.

Federal government policy at that time did not require state and local emergency management agencies to have operational plans (including evacuation plans) to “take into account the needs of individuals with household pets and service animals prior to, during, and following a major disaster or emergency” (Congressional Research Service, 2006). There is a need for clearly mandated emergency management practices to be adopted that go beyond the issuing of voluntary codes or guidelines.

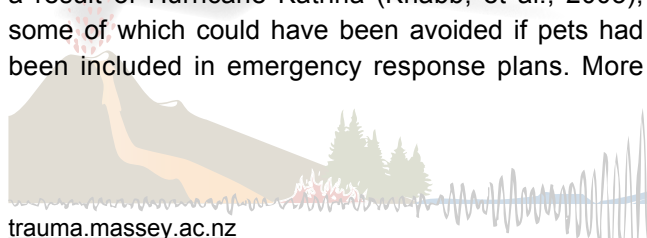
Subsequent research revealed that 44% of those who chose not to evacuate did so in part because they did not want to leave behind their pets (Fritz Institute, 2006). This was the second highest causal factor in this group for evacuation non-compliance (n=430). In addition, over 50,000 companion animals died during and after Hurricane Katrina, mainly due to forced or circumstantial abandonment (Shiley, 2006; Woodard, 2005). Factory and laboratory animals were the most zoologically vulnerable. There were over 635 million farm animals in the area affected by the hurricane (Irvine, 2009). Sanderson Farms had 1,874 broiler houses in the Mississippi region and an estimated three million broiler chickens died in affected facilities (Irvine, 2009).

Following Hurricane Katrina specific legislation known as the Pet Evacuation Transportation and Standards (PETS) Act 2006 was passed by the United States Congress. The PETS Act placed requirements on local and state emergency management to ensure companion and service animals were included in their emergency plans, provided funding for related preparedness activities, and required emergency management authorities to ensure these animals were to be rescued, cared for and sheltered during emergencies (Edmonds & Cutter, 2008). Over 1,833 human lives were lost as a result of Hurricane Katrina (Knabb, et al., 2005), some of which could have been avoided if pets had been included in emergency response plans. More

broadly, there is consensus within academic emergency management literature that saving pets, saves people through increased evacuation compliance and reduced psychosocial impact (Anderson & Anderson, 2006; Edmonds & Cutter, 2008; Heath, 1999; Irvine, 2009; Leonard & Scammon, 2007). However, the New Zealand Ministry of Civil Defence & Emergency Management has declined to seek a review of legislation in this area, in distinct contrast to the actions taken by their American counterpart, the Federal Emergency Management Agency. A further issue that will be later discussed is the importance of micro-chipping and a central micro-chip register and reunification database. Following Hurricane Katrina over 50,000 pets were stranded in New Orleans. Eighty to ninety percent of these stranded pets died. Ten to fifteen thousand pets were rescued and only one fifth of these were reunified with owners (Anderson & Anderson, 2006; Shiley, 2006). Pets were relocated outside of their respective States and there was no central database for lost and found pets. Pet collars with associated identification discs became separated, or in some cases thrown away purposefully by spontaneous animal rescue volunteers who felt their owners did not deserve them (Shiley, 2006).

2008 Chaitén Eruption

In May 2008 the largest volcanic eruption in nearly 20 years occurred at Chaitén volcano in southern Chile. Volcanic ash was erupted over 20 km into the atmosphere for up to 5 days and eventually over 1 km³ of volcanic ash was deposited over 100,000 km² of Chile and neighbouring Argentina (Lara, 2009). Chaitén town was located 10 km to the south of the volcano and was evacuated within 36 hours of the eruption's onset due to fears of a pyroclastic flow (fast moving cloud of hot gas and ash) from the volcano (Lara, 2009). Over 4,500 people were evacuated to other regional centres, such as Puerto Mont and due to the haste arrived with little more than the clothes on their back (Lara, 2009). Due to time and space requirements, pets were forbidden from evacuation transport (Leonard, et al., 2010). In Puerto Mont, senior emergency management officials reported that within days psychosocial impacts began to develop within the evacuated population, with families often devastated from leaving their pets behind. Observing televised images of their pets roaming the ash covered streets scavenging for food was particularly distressing. This prompted strict media controls by the Chilean government (Leonard, et al., 2010). Lobbying from evacuees and NGOs such as People for the



Ethical Treatment of Animals (PETA) also resulted in an extraordinary decision to deploy the army to rescue as many pet as possible from Chaitén, despite the continuing threat of a pyroclastic flow engulfing the town from the on-going eruption (Leonard, et al., 2010). A senior emergency manager reflected that significant social harm and political influence would have been avoided had the pets been allowed to evacuate with their owners (Leonard, et al., 2010). In rural areas over 10,000 cattle were evacuated from ash covered farmland (Wilson, et al., 2009). Farmers decided not to evacuate in favour of trying to tend to their livestock. Hundreds to thousands of sheep and cattle were estimated to have perished from starvation due to thick ash covering pastures. As livestock meat, wool and milk represent farmers' main source of income, the eruption has had a significant economic impact on individuals and the local economy (Wilson, et al., 2009).

The 4 September Canterbury earthquake

At 04:36 on 4 September 2010, a M7.1 earthquake struck near the township of Darfield, located south east of Christchurch. The earthquake was relatively shallow at a depth of approximately 11 kilometres. The earthquake caused significant damage in the Canterbury Region and was felt as far away as Auckland (GNS Science, 2010). The previously unmapped Greendale fault ruptured along a 29 km trace through high intensity arable and pastoral (mainly dairy) farmland in central Canterbury. The earthquake was the most damaging earthquake since the 1931 Napier earthquake, which claimed 256 lives (Department of Prime Minister and Cabinet, 2007). In contrast, it has been reported there were no lives lost in the Canterbury earthquake. However over 3,000 animals died. Most of these were avoidable deaths. A brief review of media reports and limited assessment of 10 farms on the Greendale fault indicated at least 3,000 chickens (Fox, 2010), 8 cows (T. Wilson, et al., 2010), 1 lemur (NZPA, 2010), 1 dog (Bellis, 2010) and 150 tanked fish died as a result of the earthquake.

The Canterbury earthquake caused significant damage in Christchurch and the wider central Canterbury region. As of 22 August 2011, the Earthquake Commission (EQC) had received 156,935 insurance claims relating to the 4 September 2011 earthquake (Earthquake Commission, 2011). The scale of damage included over severely damaged 12,000 homes and some 300 resident evacuations to civil defence welfare centres immediately after the earthquake, while others affected

stayed in their homes or relocated elsewhere. One of the key characteristics of this event was the low number of displaced persons, given the severity of the earthquake, which has been attributed to the time of day and strict building codes. With no mass evacuation, there were few problems of companion animal related, evacuation non-compliance and therefore, animal issues were not a serious operational issue for emergency coordinators for this event. The Canterbury Branch of the SPCA were also a member of the local Welfare Management Committee (Christchurch City Council, 2008), which benefited the response through establishing a mandated role and forming pre-event relationships.

Animal welfare impact

Companion Animals

Under the local Christchurch City Council emergency management arrangements, the Animal Control division of the Council assumes the lead for companion animal emergency management, which is consistent with the National Civil Defence Emergency Management Plan responsibilities. Under these arrangements, evacuated animals are sent to an animal control facility (including species other than dogs) with any overflow accommodated at the local SPCA shelter.

There were numerous anecdotal accounts of companion animals being deeply scared or 'spooked' by the earthquake event and running away from home. This caused stress for owners, but in most cases the companion animals returned on their own within several days. The local SPCA took a lead role in reunification of lost and found pets through their existing user pays *track-a-pet* service and they also launched a disaster appeal to provide financial support to those affected with pets. The Canterbury SPCA had 460 pets registered as lost for the month following the earthquake, in comparison to only 77 for the same period the previous year (G. Sutton, personal communication, 5 October 2010). The SPCA effort was supported by local veterinary clinics and hospitals providing advice on reunification of animals.

Several companion animals are known to have died, with one dog left behind by its owners, found dead from a heart attack when the owners returned (Bellis, 2010). Another dog was also treated for poisoning after contact with contaminated flood water (J. Mitchell, personal communication, 15 November 2010). Numerous animals were injured as they fled houses or buildings

during the earthquake, including cuts from broken glass and other bruises and abrasions (Muir, 2010). In the days to weeks after the event, many companion animals were exhibiting symptoms of on-going anxiety and stress which prompted veterinarians to advise how to deal with traumatised companion animals as advice included keeping pets indoors for several days and trying to maintain their normal routines (RadioNZ, 2010).

To cater for affected residents following the earthquake, "six welfare centres were established throughout the three affected Territorial Authorities. The maximum number presenting on any one day at a welfare centre was >250, with a total of approximately 4,000 individual visits to welfare centres occurring during the response phase" (Canterbury CDEM Coordinating Executive Group, 2010). One of the issues raised in the debrief report was the lack of provision for companion animal care at welfare centres (Canterbury CDEM Coordinating Executive Group, 2010). This included an allegation that an evacuee reliant on her disability support dog was refused entry to a civil defence welfare centre and attempts were made by staff to separate the dog from its owner (confidential personal communication, 2010), in contrary to Section 75 of the Dog Control Act 2002 that makes for the provision of disability assistance dogs to be given access to public places.

"Christchurch didn't go smoothly from what I saw and heard. More animals than resources. People turned up to the welfare centre with animals and were told to take them to SPCA, but had no transport to get them there, and were more or less just turned away. At one stage when I was manager at a welfare centre I had to do battle as there was a woman with a hearing dog, not only that the woman had mental health issues. I had to fight to get the staff to let them in, then the other staff kept trying to remove her. They had all never heard of a hearing dog before, great learning for them, however extremely traumatic for the woman who spent hours in tears" (confidential personal communication, 2010).

Although another firsthand account challenge the circumstances of this event (confidential personal communication, 2011), the issue over status, access and identification of disability support dogs in emergencies remains unclear. Additionally, as evacuated families sought new rental accommodation due to their homes being uninhabitable, there was a lack of empathy by landlords to allow dogs and a shortage of pet-friendly rental accommodation which created more stress on pet owners (J. Mitchell, personal communication, 2010).

Livestock

The greatest number of animal fatalities in the Canterbury earthquake was at the Weedons Poultry farm where two out of the three stands collapsed, killing 3,000 chickens from the total stock of 26,000 (Fox, 2010). There were few other reports of direct livestock fatalities due to the earthquake (A. Baird, Rural Recovery Coordinator, personal communication, 2010); and typically these only occurred close to the fault where strong shaking led to peak ground accelerations in excess of 0.5 g (acceleration due to Earth's gravity). For example, eight cows waiting to be milked on a concrete pad in Hororata less than 1 km from the fault were knocked over, resulting in broken legs and pelvises. These had to be destroyed (Wilson, et al., 2010). Other cows only several metres away from the concrete pad on a (softer) gravel and soil track did not suffer any injuries.

Numerous farmers reported their livestock were spooked (stressed) by the earthquake and the continuing aftershocks. This was exacerbated by the number of dairy sheds that were unable to milk cows due to structural damage from ground shaking or fault rupture beneath the shed itself, or the loss of electricity due to outage across a large part of the Selwyn district. This required herds to use neighbouring milking sheds and often required a reduction in milking from twice to once a day. This perpetuated stress amongst dairy herds led to significant increases in milk somatic cell counts. In an effort to assist farmers, Fonterra and Synlait milk companies waived high somatic cell count and temperature gradient standards penalties for over a week following the earthquake. In the central section of the 29 km rupture zone where horizontal and vertical displacement was greatest, the land surface was broken with fractures up to 1 m deep and 0.5 m wide across a 5-20 m wide zone (Figure 2). Some farmers were concerned that livestock may injure themselves in the ground fissures, particularly if spooked. However, farmers simply removed livestock from paddocks impacted by the surface fault rupture if they had not been able to flatten or close fractures with a heavy roller or cultivator (see Almond P, et al., 2010 for further information). This became particularly important for roadside paddocks, where strong interest in viewing the surface fault rupture meant some properties were at times visited by hundreds of people per day, creating an additional risk that livestock would be spooked (A. Baird, Rural Recovery Coordinator, personal communication, 2010). Another concern was that livestock were exposed to the increased risk of infectious disease transference if

the general public were allowed to go from farm to farm (H. Squance personnel communication 2010). The fault rupture also severed buried water pipes for supplying livestock, damaged pumps and affected the ground water table. Whilst there were not significantly hot or dry conditions immediately following the earthquake (such as would be expected in January or February), restoration of livestock water was still a high priority for farmers to ensure animal welfare. Most farms had repaired pipes or shifted livestock to paddocks with reliable water supplies within hours to days of the earthquake.



Figure 2: Surface rupture of the Greendale fault, close to Highfield Road, North Canterbury viewed from the air and ground (inset). At this point there was about 4 m horizontal movement and over 1 m vertical movement on the fault (Main photo: Russel Green, GEER; Inset: University of Canterbury).

Laboratory Animals

The University of Canterbury maintains a range of animals and arthropods for teaching and experimental purposes. Their welfare was an immediate concern for staff, however controlled access to buildings was required by the university’s incident management team until structural stability of buildings could be checked. Electricity was disrupted at the University for 12 hours and when restored it was only to some buildings due to structural and non-structural damage. Those with animal welfare requirements were made a priority. Immediate welfare concerns were ensuring animals had access to food, water and a safe living environment. In rat laboratories, water bottles tipped over in cages, but these were replaced within 6-12 hours. The strong shaking created large oscillating waves in laboratory fish tanks which in an extreme case lead to a small number of freshwater fish dying after they were washed over the side of one tank. In a tank of snapper (*Lutjanidae*) the excessive wave motion caused the fish to vomit. Heating was lost for the tropical fish which require a regulated temperature (25°C), however, there were no deaths or

mortality related to this. Fruit fly breeding was also set back by the loss of heating.

Where tanks and inhabited containers were physically tied down, on shelves with a lip, or on a braked trolley there were few instances of damage. However, unsecured tanks and containers fell from selves but fortunately resulted in surprisingly few deaths. The worst instance was a tank containing ~2,000 cockroaches that fell and smashed within the arthropod laboratory. Whilst most cockroaches survived the fall, retrieving them was deemed too difficult. After other valuable insects were removed from the room, it was fumigated and cleaned.

On-going aftershocks continued to stress animals. For example, rat breeding was reported to be reduced by less than 10% in the following weeks and snapper ceased eating for up to a week, despite a change in water within 12 hours of the main earthquake. The stress to animals delayed various experiments for up to several weeks or halted them completely in extreme cases.

The loss of electrical power increased the difficulty of providing the animals with automated feed and water, and environmental control processes, such as changing fish water, had to be laboriously done by hand (Prof. W. Davison personnel communication 2010).

The university also maintains a number of secure facilities in accordance with New Zealand Biosecurity legislation. Communication was made with Biosecurity New Zealand on the day of the earthquake to assure them that facilities were still secure. Several days later a structural engineering assessment was also delivered to assure the regulatory body of laboratory integrity.

Discussion

The events that unfolded after the Canterbury earthquake highlight the value of effective planning and offer a glimpse of what impacts emergency managers may need to cope with regarding animals following a disaster where large numbers of people are displaced, such as after Hurricane Katrina. It is clear that despite the considerable damage and lack of human casualties; there are areas for improvement that require the attention of emergency managers, pet owners and animal welfare professionals. The improvements are not unique to this event, but add to our collective knowledge. The highlighted lack of capacity in animal emergency management in New Zealand compounds progress to protect animals and ultimately, people.

From anecdotal evidence following the Canterbury earthquake, supplemented by existing literature, the following key lessons can be drawn:

Key Lessons

Veterinary Professionals

Veterinary professionals are likely to be become involved in response operations during disasters and need to ensure they are prepared for operating in a civil defence emergency management environment. Each Civil Defence Emergency Management Group convenes a Welfare Advisory Group (WAG), on which animal welfare should be represented. Likewise, Rural Support Trusts will be heavily involved in any disaster affecting rural communities, so should also have provisions within their structures and systems for inclusion of veterinary and animal welfare expertise. Veterinary professionals should liaise with these representatives to ensure they can be effectively integrated into emergency plans, training and exercises (Lovern, 2003). Micro-chipping is an important tool for the effective identification and reunification of lost companion animals, in particular following mass displacement during emergencies. Veterinary professionals should continue to actively promote micro-chipping of pets and could consider offering discounts during *Get Ready* (disaster preparedness) week, as well as reminding pet owners to ensure their animals are included in household emergency plans during consultations. Pet owners should also be strongly encouraged to ensure they have a pet carrier for each animal, and a muzzle and lead for each dog – as lack of pet carriers is a casual factor for evacuation failure (Heath, 2001). Following hazard events such as flooding, earthquake, volcanic eruption and hazardous materials incidents, it is likely that veterinary professionals may be presented with contaminated animals. Veterinary professionals should familiarise themselves with decontamination procedures such as those offered by Soric et al (2008). Key competencies for animal emergency responders are currently being compiled by H. Squance (personal communication, 2010) and this research will be of interest to many veterinary professionals. Veterinary practices also need to ensure they have sufficient business continuity arrangements to continue to provide services, not only to animals in hospital care, but to any potential surge of injured animals (Wingfield & Palmer, 2009), including development of evacuation plans and identification of alternate facilities. Further research is

needed to analyse whether any companion animals attended veterinary clinic consultations following the Canterbury earthquake due to stress (H. Squance, personal communication, 2010).

Emergency Management

Emergency management organisations need to ensure that pets and service animals are included in emergency plans and that staff and volunteers are familiar with the protocols for handling pets and their owners. Operational personnel need to understand that it is not appropriate to evacuate people without their pets, as this may create significant repercussions including evacuation non-compliance, illegal re-entry to evacuated areas by pets owners to retrieve their pets, psychosocial impacts from forced abandonment of pets or pet loss, refusal of medical treatment by pet owners until the needs of pets are met, as well as potential criminal liabilities (Glassey, 2010). The lead agency approach of having the local authority animal control coordinate the companion animal emergency welfare function, with support from the local SPCA appeared effective in Canterbury. There needs to be greater recognition that local authorities as a whole take responsibility for this mandate and not assume that generally under-resourced charities will fill the void. Following the response phase, it is likely during recovery that welfare agencies supporting displaced families will encounter a demand for medium term accommodation that is able to cater for pets and this may well be in short supply. Recovery plans should consider this issue and encourage family units (pets and their owners) to be accommodated together. There is an opportunity for the MCDEM Consistent Messaging programme to also ensure information is included on dealing with traumatised pets.

Legislation

The importance of specific animal welfare emergency management legislation has not been realised in New Zealand, in contrast to the passage of the Pet Emergency Transportation and Standards (PETS) Act 2006 by US lawmakers to address major lessons learned following Hurricane Katrina (Glassey, 2010). The PETS Act 2006 required local and state emergency management plans to include arrangements for pets and service (disability assistance) animals; funding for state and local pet and service animal emergency preparedness; and lastly, requirements that pets were rescued, cared and sheltered during emergencies (Edmonds & Cutter, 2008).

An outdated and fragmented regulatory framework for animal welfare emergency management is spread across the Animal Welfare Act 1999, Civil Defence Emergency Management Act 2002 and Dog Control Act 1996. The issue around disability assist dog status, access and identification has been highlighted by the September earthquake event. Under the Dog Control Act 1996 a “disability assist dog means a dog certified by one of the following organisations as being a dog trained to assist (or as being a dog in training to assist) a person with a disability” including Hearing Dogs for Deaf People New Zealand, Mobility Assistance Dogs Trust, New Zealand Epilepsy Assist Dogs Trust, Royal New Zealand Foundation of the Blind, and Top Dog Companion Trust. With no nationally required external identification of dogs, it is difficult for welfare centre staff during emergencies to ascertain whether an accompanying dog is a genuine disability assist dog or not. *Bona fide* disability assist dogs are eligible to be registered as such, which provides a right to access and remain in public places with such legal provisions overriding any other enactment or bylaw (Section 75, Dog Control Act 1996). This legitimises the right for those with disability assist dogs to access and remain in welfare centres, whether a state of emergency is in effect or not. Although the laws around disability assist dogs are clear and appropriate; it would appear these are not well understood by the emergency management sector.

The Civil Defence Emergency Management Act 2002 however is not so clear in its application to animal welfare during a state of emergency. Under Section 86, powers to evacuate may only be executed for the preservation of human life, and such evacuations only provide for the exclusion of persons or vehicles – not animals. Similarly, the power to requisition (Section 90) only applies for the preservation of human life. In the scenario of a poultry farm being flooded during a state of emergency, it appears that the powers outlined in the act, may not be able to be applied for the preservation of animal life. One of the provisions of the Civil Defence Emergency Management Act 2002 is that it shall not affect the functions, duties, and powers under other acts or general law (Section 6). This means the powers of the Chief Fire Officer (or delegated Officer in Charge) under the Fire Service Act 1975 and an Inspector and Auxiliary Officer appointed pursuant to the Animal Welfare Act 1999 remain largely unaffected. During the following 22 February 2011 earthquake in Christchurch, it was reported that defence and police personnel at

cordons did not permit access by SPCA Inspectors (R. Dawson, Chief Inspector, personal communication, 2011), contrary to the SPCA Inspectors’ power to do so under the Animal Welfare Act 1999 and the provision of Section 6 of the Civil Defence Emergency Management Act 2002. This again highlights the lack of legislative knowledge by officials which needs to be addressed. Finally, micro- chipping of pets is a proven mitigation tool according to the American Microchip Advisory Council for Animals (2007). Although New Zealand is fortunate to require all newly registered dogs to be micro- chipped under the Dog Control Act 1996 (Section 36A), other pets such as cats are not required to be micro- chipped. Counter productively, disability assist dogs are excluded from the requirement to be micro- chipped due to their classification as working dogs (Section 36(2A)). With the massive surge in displaced pets found following the 4 September 2011 earthquake, having the wider population of pets being micro- chipped would have significantly increased rates of reunification with their owners. Local authorities in their dual role for animal control and civil defence emergency management as well as animal welfare and veterinary professionals should encourage wider adoption of micro- chipping for all pets and disability assist dogs.

Animal Welfare Organisations

Currently, the New Zealand civil defence emergency management arrangements do not designate a lead agency for the management of lost and found pets following an emergency, or an agency responsible for pet/owner reunification. During the response to the 2010 Canterbury earthquake, the local SPCA (Canterbury SPCA) operated their independent track-a-pet service that incurs a \$10 fee to register lost animals and no charge to register found animals (Canterbury SPCA, 2010). Online newspapers and trading sites (e.g. www.trademe.co.nz) also advertised lost pets. This created some confusion about where to search for information on a lost pet. Evidence from the Canterbury earthquake and other disasters indicates coordination of lost and found pet information services is essential. For example, following Hurricane Katrina there was no single missing pet database which resulted in some owners visiting over fifty animal shelters in an attempt to locate their pet (Shiley, 2006). There would be considerable value, both in terms of time and resource, for one official lost and found database which is used by all current animal welfare providers, and information providers and is endorsed by CDEM to give the public confidence in

pet reunification. The current options are limited. For example, the free national online lost and found pets service “petsonthenet.co.nz” database has limited search capability, and “track-a-pet” is only a local service. Consideration needs to be given for a comprehensive system that meets the needs of all users. Related costs associated with the surge of lost and found notifications should be considered claimable under central government financial assistance arrangements.

In a wider sense, the Canterbury earthquake experience also highlighted the value of a single consolidated micro-chip database for companion animals, which would allow rapid searching of or identification of lost pets following a disaster. Currently, there are two commonly used databases: the National Dog Control Database operated by the Department of Internal Affairs and the New Zealand Companion Animal Register. The former only provides coverage to dogs, which automatically creates multiple systems to be searched. Again a lesson following Hurricane Katrina was the problems created through multiple lost and found databases of companion animals. An integrated national micro-chip database that covers all species and is accessible by all legitimate users would be of considerable value (Animal Control, SPCA, and Veterinary Clinics).

Other considerations

More than 99% of the known animal fatalities associated with the Canterbury earthquake occurred on a poultry farm. It is well established that caged production animals are zoologically vulnerable (Irvine 2009). The nature of the damage would suggest that such facilities would benefit from ensuring buildings and cage fittings are seismically restrained, as well as appropriate emergency plans being in place to protect these vulnerable animals. According to Irvine (2009), over a million hens were trapped in damaged cages following tornados at the Buckeye Egg farm in Ohio. Despite rescue efforts, tens of thousands of birds died of starvation, dehydration and exposure due to building damage as well as automated feeding, watering and waste systems being destroyed (Irvine, 2009). In committing to the philosophy of comprehensive emergency management, farm operators, public officials and the wider community have a responsibility to ensure such vulnerable animal groups are afforded appropriate mitigation, preparedness, response and recovery in a disaster management context. Compliance requirements for factory farms should include provision of emergency animal welfare planning.

Conclusion

The 2010 Canterbury earthquake provides valuable lessons for future emergency management in New Zealand. It highlights that animal emergency management is an important component of wider civil defence and emergency management.

Animals were vulnerable to a range of physical and psychological impacts, with some specific groups more acutely vulnerable, such as captive species, including factory farmed and laboratory animals. Large numbers of pets were reported lost, commonly traumatised by earthquake shaking. This put significant pressure on lost pet databases, and raised issues about how this is best managed. Feedback relationships were exposed, in that trauma to companion animals, and even farmed animals, can have serious knock-on psychosocial impacts on their human owners.

The 2010 Canterbury earthquake caused considerable distress and disruption to people or animals. However, the timing of the main earthquake was extremely fortuitous (early in the morning) and the relatively low number of displaced or injured persons did not put significant pressure on management of displaced companion animals. Nor were farms seriously impacted by feed damage or extended loss of essential services (such as electricity), mitigating any farmer desire to evacuate livestock, access significant supplementary feed supplies to maintain livestock, or destroy livestock on a large-scale. In contrast to companion animal emergency management, there is limited literature available on livestock emergency management practice and further research is required to ensure emergency management approaches in New Zealand are evidence based.

It is clear from the Canterbury earthquake that the integration of animal welfare organisations and veterinary professionals with wider civil defence emergency management will be essential for managing future disasters. As guardians of these animals, the human population has a moral obligation to afford protection to them in times of disaster. Veterinary professionals in New Zealand need to be proactive and engage in local civil defence emergency management arrangements before disaster strikes, as they will provide important services during major emergencies that affect people and their animals.

As new guidelines are published by NAWEM, further uptake of animal emergency planning is likely to occur

and this will see an increased demand for contributions by veterinary professionals to local civil defence emergency management. The uptake of companion animal emergency management by CDEM Groups would be strengthened if statutory mandate gave effect to the new NAWEM guidelines.

Whatever the future New Zealand disaster; pet owners, farmers, veterinarians, animal welfare officers and emergency managers need to collaborate to create resilient communities, with the understanding that animals too, are part of these communities.

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Resources

An animal emergency management special interest group has been established by the International Association of Emergency Managers. A group wiki to share information and resources is available from <http://animalemergency.wikispaces.com>

Postscript Note

While this paper was written to focus on the Sept 4 earthquake event, many more people were displaced and homes destroyed during the 22 February 2011 Christchurch earthquake. Media and anecdotal reports at the time indicated the loss of animals was a significant issue for displaced persons and an issue for the CBD cordon management, as people attempted to breach the cordon to rescue lost pets. Analysis of this event will provide rich data for future research into animal emergency welfare.

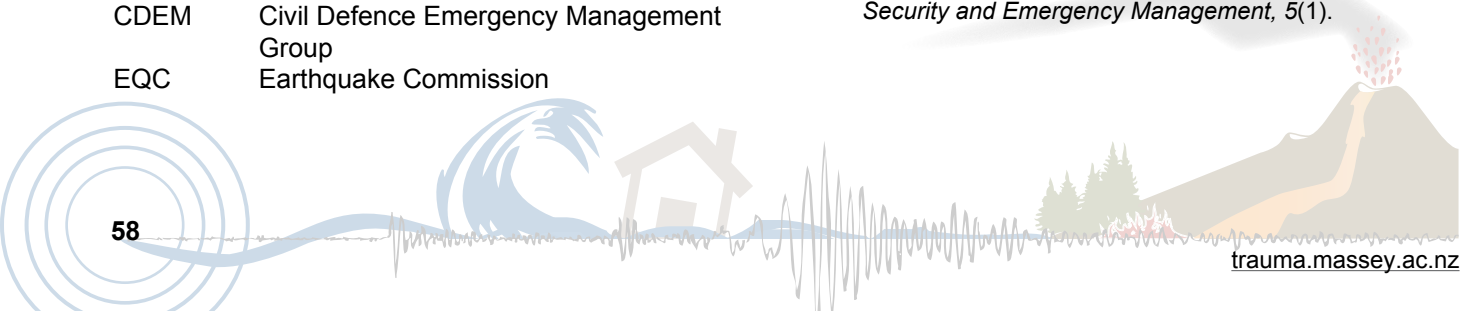
Abbreviations

CDEM	Civil Defence Emergency Management Group
EQC	Earthquake Commission

MAF	Ministry of Agriculture and Forestry
MCDEM	Ministry of Civil Defence & Emergency Management
NAWEM	National Animal Welfare Emergency Management Liaison Group
NZCAC	New Zealand Companion Animal Council
PETA	People for the Ethical Treatment of Animals
PETS	Pet Evacuation and Transportation Standards
SPCA	Society for the Prevention of Cruelty to Animals
WAG	Welfare Advisory Group
WSPA	World Society for the Protection of Animals

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This thesis is submitted in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy of the University of Portsmouth.



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