



Australian Government
 Attorney-General's Department
 Emergency Management Australia

AUSTRALIAN JOURNAL OF EMERGENCY MANAGEMENT

ISSN: 1324 1540

Australian Emergency Management Institute

Volume 30 | No. 2 | April 2015



ANIMALS IN
 EMERGENCY
 MANAGEMENT

 **DISASTER
 RESILIENT
 AUSTRALIA**
GET READY

EXERCISE ODYSSEUS:
 RESPONDING TO ANIMAL
 EMERGENCY OUTBREAKS

5


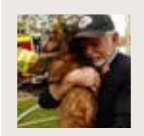

IMPLICATIONS FOR LIVESTOCK
 OWNERS, PET OWNERS AND
 EMERGENCY PLANNERS

18

CONSIDERING
 THE HUMAN-
 ANIMAL BOND

31

Some contributions to the *Australian Journal of Emergency Management* are reviewed. Academic papers (denoted by **R**) are peer reviewed to appropriate academic standards by independent, qualified experts.

	Foreword	4
	By Mark Schipp, Australian Chief Veterinary Officer	
	Exercise Odysseus: the national livestock standstill exercise program	5
	By Tony Callan, Department of Agriculture	
	A state plan for animal welfare in emergencies: Victoria's experience in developing and implementing a state animal welfare emergency plan	9
	Cathy Pawsey, Department of Economic Development, Jobs, Transport and Resources	
	Dealing with livestock affected by the 2014 bushfires in South Australia: decision-making and recovery	13
	Dr Jeremy Rogers, Trent Scholz and Amelia Gillen, Primary Industries and Regions, share the findings of recent treatments to save livestock after bushfires. R	
	The preparedness and evacuation behaviour of pet owners in emergencies and natural disasters	18
	Dr Melanie Taylor, Erin Lynch, Dr Penelope Burns (University of Western Sydney), and Greg Eustace (RSPCA Queensland). R	
	Does emotional closeness to pets motivate their inclusion in bushfire survival plans? Implications for emergency communicators	24
	Joshua Trigg, Dr Bradley Smith and Dr KIRRILLY Thompson, Central Queensland University, Appleton Institute. R	
	The challenges of managing animals and their owners in disasters: perspectives of Australian response organisations and stakeholders	31
	Dr Melanie Taylor, Megan McCarthy, Dr Penelope Burns (University of Western Sydney), Dr KIRRILLY Thompson, Dr Bradley Smith (CQUni Appleton Institute) and Greg Eustace (RSPCA Queensland). R	
	Risk perception, preparedness and response of livestock producers to bushfires: a South Australian case study	38
	Dr Bradley Smith, CQUniversity, Appleton Institute, Dr Melanie Taylor, University of Western Sydney, and Dr KIRRILLY Thompson, CQUniversity, Appleton Institute. R	

AUSTRALIAN JOURNAL OF EMERGENCY MANAGEMENT

Vol. 30 No. 2, April 2015, ISSN: 1324 1540

PUBLISHER

The *Australian Journal of Emergency Management* is published by the Australian Government Attorney-General's Department. The Journal is published on the Australian Emergency Management website at www.em.gov.au.

COVER

Fire and Rescue NSW firefighters found the pet of a Newcastle resident hiding inside the house when they were called to a fire in August 2014. The owner cried tears of joy when his dog, Dyllis, emerged from the fire-ravaged home in the arms of a firefighter. The owner was overjoyed at a time of real loss and he thanked firefighters for rescuing his dog. Information about how pets and animals influence the behaviours of people during emergencies is a feature of this special edition. Image: *The Newcastle Herald*.

ABOUT THE JOURNAL

The *Australian Journal of Emergency Management* is Australia's premier Journal in emergency management. Its format and content is developed with reference to peak emergency management organisations and the emergency management sectors—nationally and internationally. The Journal focuses on both the academic and practitioner reader and its aim is to strengthen capabilities in the sector by documenting, growing and disseminating an emergency management body of knowledge. The Journal strongly supports the roles of Emergency Management Australia (EMA) and the Australian Emergency Management Institute (AEMI) as a national centre of excellence for knowledge and skills development in the emergency management sector. Papers are published in all areas of emergency management. The Journal emphasises empirical reports but may include specialised theoretical, methodological, case study and review papers and opinion pieces. The views in this journal are not necessarily the views of the Attorney-General's Department.

EXECUTIVE EDITOR

The Editor-in-Chief of the Journal with responsibility for the Journal's operations and policies is Mark Crossweller, Director-General, Emergency Management Australia.

EDITORIAL ADVISORY COMMITTEE

- Andrew Coghlan, Australian Red Cross, Melbourne
- Michael Eburn, Australian National University College of Law
- Prof Jennifer McKay, University of South Australia
- David Parsons, NSW Trade & Investment
- Rachel Antone, AEMI, Attorney-General's Department


EDITORIAL TEAM

AEMI Contract Director: Neil Head.
Managing Editor: Christine Belcher, Grey Canberra.
Design, typesetting: Biotext, Canberra.

CIRCULATION

Approximate circulation (print and electronic): 5 500.

For pets' sake, save yourself! Motivating emergency and disaster preparedness through relations of animal guardianship **43**

Dr Kirrilly Thompson, Central Queensland University, Appleton Institute. 



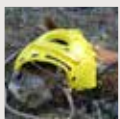
Safeguarding children from animals in emergencies **47**

Susan Davie, Save the Children, explains why planning for animals provides a point to include simple child safeguarding activities.




Achieving a global goal for the protection of animals in disasters: India's potential impact **49**

Dr Wayne Ricketts, World Animal Protection, describes how India's collaborative approach to disaster management has benefits for protecting the lives of animals in disasters.



Helping hands, hurting hooves: towards a multidisciplinary paradigm of large animal rescue **53**

Dr Kirrilly Thompson, Appleton Institute, Central Queensland University, MaryAnne Leighton, Equine Emergency Rescue, and Professor Chris Riley, Massey University, use case studies to show that the safety of humans and animals during rescue are mutually dependent. 

When humans and other animals connect: disaster narratives of fear, hope and change **59**

Dian Fowles, Flinders University, is investigating the impact of natural disasters on human-animal relationships.

REPORT: Animal attachment and disaster resilience in vulnerable communities **60**

By Jacqueline Mills, World Animal Protection



People and their animals in emergencies: snapshots from past emergency events **62**

By Dr Rachel Westcott, Coordinator, South Australian Veterinary Emergency Management (SAVEM) Inc.

National Planning Principles for Animals in Disasters **65**



EM Online: Do you have a plan to protect your pet when disaster strikes? **66**

protectyourpet.org.au – A new resource is encouraging the public to be prepared, act early and stay safe.

PUBLICATION DEADLINE

The Journal is published on the last day of January, April, July and October each year. Copies of the Journal are distributed quarterly without charge to subscribers throughout Australia and overseas.

COPYRIGHT

Material in the *Australian Journal of Emergency Management* is provided under a Creative Commons Attribution 3.0 Australia license (www.creativecommons.org/licenses). For the avoidance of doubt, this means this licence only applies to material as set out in this document.

Relevant licence conditions are available on the Creative Commons website, www.creativecommons.org/licenses.

SUBMISSIONS

The *Australian Journal of Emergency Management* welcomes submissions. The Contributors' Guidelines are available at www.em.gov.au/ajem. In brief, contributions should be no longer than 3 000 words, be submitted as a Word file and contain photographs, graphs and tables in their original software applications as separate files. All articles must contain an abstract and a small biographical paragraph about each author. A Copyright Release form and the Editorial Policy are available on the website. Authors should familiarise themselves with the Journal before making a submission. Contributions should be forwarded electronically to ajem@ag.gov.au. All academic papers are peer reviewed. Please note that the *Australian Journal of Emergency Management* is indexed by several indexing organisations throughout the world, please visit our website for details.

SUBSCRIPTIONS

For new subscriptions please visit us online at <https://ema.infoservices.com.au/member/new>.

Changes to current subscription details can also be made by visiting us online at <https://ema.infoservices.com.au/member>.

CONTACT US

Mail: *Australian Journal of Emergency Management*
Australian Emergency Management Institute
3–5 National Circuit, BARTON ACT 2600
Email: ajem@ag.gov.au
Phone: 0409 823 344 (editorial enquiries only)



Foreword

By Mark Schipp, Australian Chief Veterinary Officer



Pets, livestock and wildlife contribute enormously to our perception of Australia. In suburban Australia having a pet around the home or walking a dog to the park are part of our daily experience. The Australian identity at home and abroad has been shaped by images of our rural areas; we are the country of clean, green agriculture and unique fauna. But we are also a country of sudden and catastrophic natural disasters.

When disasters strike they affect not only individuals and communities, but also the pets, livestock and wildlife that we rely on, care for and appreciate. This special edition focuses on animals in emergencies. We might admire the dogs used in emergency responses to locate buried victims, but we should also consider the animals caught up in disasters or assisting in trauma recovery.

After fire or flood farmers not only have the task of rebuilding or cleaning up residences but of dealing with maimed or dead animals. It is often impossible to evacuate livestock, which may mean the owners are themselves reluctant to evacuate. Animals that are lost, injured or deceased require food, water, shelter, veterinary treatment, euthanasia or disposal; and of course this can be emotionally and psychologically draining for those whose daily responsibility is the care of animals.

Veterinary practices or boarding kennels caught up in a fire might not only lose their business premises but also their clients' valued pets. In the event of a natural disaster homeowners may be reluctant to evacuate if they can't take their pets with them but, by the same token, concern for pets may be a motivator to encourage owners to have a disaster plan which includes early evacuation for the sake of their pets. These are some of the issues considered in this special edition of the Journal.

After trauma such as experiencing a natural disaster or being in the stressful position of responding to emergency situations, an animal companion can assist in the healing process. During the Victorian bushfires of 2009 the image of a koala suffering burns and accepting a drink of water from a firefighter became a symbol of hope at that difficult time.

Globally, tens of millions of people are dependent on animals for income, food, transport, draught power and manure fertiliser. In communities where there is this direct reliance on animals there is substantial benefit in preparing communities in disaster-prone areas through education and training on how to evacuate animals and how to care for them during and after an emergency event. So it is good to see intergovernmental bodies such as the World Organization for Animal Health and non-government bodies such as World Animal Protection addressing these critical needs.

In developing countries, where an animal might represent not only a source of food or of income but accumulated savings with no form of insurance, response following natural disasters that includes provisions for animals can greatly reduce the long-term aid needs of the community.

Consideration for animals in emergencies is a global issue as natural disasters fall on all communities from time to time. Assisting communities to prepare for, or recover from, natural disasters often means addressing the needs of their animals – whether they be livestock, wildlife or companion animals.

I commend this special edition of the Journal to you.

Mark Schipp

Australian Chief Veterinary Officer

Exercise Odysseus: the national livestock standstill exercise program

By Tony Callan, Department of Agriculture

ABSTRACT

Exercise Odysseus, a series of more than 40 discussion exercises and field-based activities, was conducted throughout 2014 and early 2015 to enhance Australia's (government and industry) ability to implement a national livestock standstill in the event of an outbreak of foot-and-mouth disease (FMD). Implementing movement restrictions on all animals susceptible to FMD is an important step in reducing the spread of FMD and bringing it under control.

Introduction

Australia is fortunate to be free from FMD, a very serious and highly contagious disease that could cost Australia more than \$50 billion over 10 years in the event of a medium to large outbreak¹. A critical activity in limiting the spread of FMD in the event of an outbreak will be to implement a national livestock standstill for at least 72 hours. A national livestock standstill would minimise the likelihood of further spread of disease while the nature and extent of an outbreak is identified. To be effective this needs to be implemented rapidly.

A national livestock standstill would be declared by the National Emergency Animal Disease Management Group (NMG) acting on advice of the Consultative Committee on Emergency Animal Disease (CCEAD). Under Australia's constitutional arrangements, the authority to implement and enforce a national livestock standstill is contained in state and territory legislation. Therefore a national livestock standstill depends on all jurisdictions implementing their individual arrangements in a consistent and co-ordinated manner.

During a national livestock standstill, FMD susceptible livestock (cattle, sheep, pigs, goats, buffalo, alpacas, camels and deer) must not be moved even if they are



The Exercise Odysseus logo was used extensively and assisted to visually link the various activities and the documents produced.

not showing signs of illness and the disease has not been detected nearby. Movement restrictions on animal products (e.g. meat, wool and dairy products) do not form part of a national livestock standstill but may apply in jurisdictions with FMD as part of their disease control strategies.

Under the existing protocol, the need for a national livestock standstill would be reviewed at 72 hours and a decision made to either extend the standstill or impose other types of movement restrictions.

Implementation of a national livestock standstill would be complex and would rely on cooperation and co-ordination across government agencies and industry organisations and compliance by livestock producers nationally.

Exercising the implementation and management of a national livestock standstill provided an opportunity to explore existing response arrangements. This included government agencies and industry organisations identifying where enhancements could be made and best practices to be encouraged and retained.

Previous national agricultural exercises (*Exercise Minotaur* in 2002 and *Exercise Eleusis* in 2005) consisted of a single activity involving all agricultural agencies and select industry organisations. These were functional exercises where national and jurisdictional co-ordination centres and some local control centres were established with a real-time scenario being introduced and run over several days.

¹ ABARES, 2013, Potential socioeconomic impacts of an outbreak of foot-and-mouth disease in Australia, Australian Bureau of Agricultural and Resource Economics and Sciences research report, ABARES, Canberra.

In developing the concept for a livestock standstill exercise (*Exercise Odysseus*), it was recognised that to get the most out of this activity a different approach was required. Accordingly, the concept of conducting a program of discussion exercises and fieldbased activities over a 12-month period evolved. This enabled government agencies and industry organisations that may be involved in a national livestock standstill to conduct exercises specific to their needs. Discussions could be more focused and outcomes and lessons identified from each exercise used to inform subsequent exercises conducted as part of *Exercise Odysseus*.

Developing *Exercise Odysseus*

The aim of *Exercise Odysseus* was to enhance national (government and industry) preparedness for and implementation of a national livestock standstill in response to an outbreak of FMD.

The objectives of *Exercise Odysseus* were to:

- Assess national, jurisdictional and industry arrangements for implementing and managing a national livestock standstill.
- Assess national, jurisdictional and industry decision making processes in declaring and implementing a national livestock standstill.
- Assess mechanisms for communicating a national livestock standstill and their effectiveness.
- Assess co-ordination within and between government and non-government agencies and industry prior to and during a national livestock standstill.

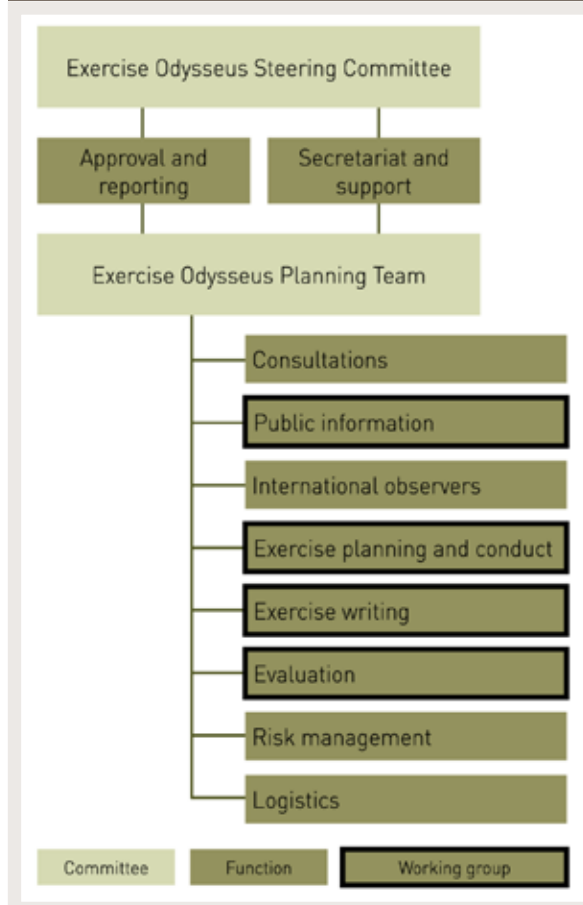
In addition, it was anticipated that *Exercise Odysseus* would enhance:

- the level of preparedness by government and industry to implement and manage a national livestock standstill
- awareness of the importance, role and potential impacts of a national livestock standstill among potentially affected agencies, organisations and communities.

It was recognised that not all government agencies and industry organisations would have the same needs and their objectives could differ slightly from those mentioned above. Accordingly, flexibility was built into the program so agencies and organisations could develop their own sub-objectives to exercise elements of a national livestock standstill that were relevant to their needs.

For example, the Victorian Department of Environment and Primary Industries had been working with saleyard operators to develop saleyard plans to guide implementation of a livestock standstill. Therefore exercises conducted in Victoria were used to evaluate existing saleyard plans to identify opportunities for improvements or best practice that could be incorporated into other saleyard plans.

Figure 1: Governance structure used to guide the planning, conduct and evaluation of *Exercise Odysseus*.



The Western Australia Department of Agriculture and Food used *Exercise Odysseus* to inform saleyard operators of the need to develop saleyard plans and to develop plans where they did not exist.

Being a complex, interwoven program of activities, *Exercise Odysseus* called for a governance structure that would ensure all activities were designed, planned, conducted and evaluated in a co-ordinated manner. Although the Department of Agriculture was primarily responsible for co-ordinating *Exercise Odysseus*, a steering committee, a planning team, and several subject-specific working groups were established to guide planning, conduct and evaluation of all *Exercise Odysseus* activities.

Three working groups—communication, scenario writing and evaluation—undertook work required to ensure that *Exercise Odysseus* was successfully communicated, documented and evaluated.

Agreeing on a common exercise management methodology early in the planning phase ensured that all activities were planned and conducted in a consistent manner. This was aided by the exercise management training provided by Emergency Management Australia at the Australian Emergency Management Institute (AEMI), which was undertaken by some of the planning team members either before or during the planning phase.



During a livestock standstill, livestock trucks may need to be diverted to aggregation points where animal welfare needs can be managed.

Communicating about *Exercise Odysseus*

National exercises can draw extensive media coverage. In anticipation of this, the Communication Working Group developed and documented a strategy for communicating about *Exercise Odysseus*. The strategy was designed to raise awareness of *Exercise Odysseus*, while ensuring that its activities were not mistaken for an actual outbreak of FMD. It was also used as an opportunity to inform government agencies, industry organisations, and the public about Australia's approach to managing the response to an outbreak of FMD.

The strategy included agreed messages about *Exercise Odysseus*, a national livestock standstill and FMD. These messages were used extensively by government agencies and industry organisations involved in the exercise program. This contributed towards consistent media (print and television) reporting on *Exercise Odysseus* and reduced the risk of activities being mistaken for an outbreak of FMD.

The scenario

To ensure that all *Exercise Odysseus* activities were conducted in a co-ordinated manner, a single national scenario was used. It was important that the scenario was realistic but not so complex that participants would be distracted by aspects not relevant to implementing and managing a national livestock standstill.

The scenario was based on an outbreak of FMD initially detected on a cattle property in Queensland. The scenario was set in the first few days of the outbreak when a national livestock standstill would be considered and implemented, as well as when decisions would be made to lift or extend the standstill beyond the initial 72-hour period. In the scenario, livestock and other movements from infected properties were identified as having the potential to spread FMD within Queensland and interstate. This scenario allowed the Australian, state and territory governments and livestock industry organisations to focus their exercises on issues associated with implementing and managing a livestock standstill.

Conducting *Exercise Odysseus*

Conducting a program of co-ordinated activities is a low-risk strategy, compared to one major exercise, in that the impact on the overall program would be negligible if one or more of the activities did not proceed. Despite a few minor logistical issues and a fire alarm leading to a building evacuation at the commencement of a national level exercise, none of the activities was cancelled.

Each activity focused specifically on one aspect of implementing or managing a national livestock standstill. These activities were conducted at national (government and/or industry), jurisdiction, local and agency levels.

At a national level, five discussion exercises were conducted. Two of these looked specifically at communicating about a national livestock standstill. The first focused on issues associated with communicating the implementation of a national livestock standstill, and the second on issues associated with extending or lifting the standstill.

The other three national-level exercises were conducted for the CCEAD and NMG. These activities allowed participants to practice decision-making in real time, using information that would be available during an actual response. Each of these exercises allowed participants to review their decisions, identify areas for improvement and practices to be encouraged or retained.

A number of national level industry-specific discussion exercises were also conducted focusing on industry arrangements for implementing and managing a national livestock standstill.

At a jurisdictional level, 18 discussion exercises were conducted. These focused on response arrangements, communication and co-ordination mechanisms in the respective jurisdiction. Some jurisdictions also conducted local level field-based activities. These included exploring issues associated with implementing a national livestock standstill at a saleyard on sale day when the yards were full of livestock (some regional saleyards are capable of holding in excess of 40 000 sheep). Activities



involved saleyard owners, stock and station agents, transporters, local government and others that may be involved in the management of a national livestock standstill at a local level.

A number of government agencies assessed their respective response arrangements and how these may be applied in responding to an outbreak of FMD while raising awareness amongst staff and executive about issues associated with implementing a national livestock standstill.

International observer program

Australia has existing arrangements with a number of countries to share resources during an emergency response. It also provides assistance to neighbouring countries in emergency preparedness for outbreaks of diseases such as FMD. As these reciprocal arrangements include observing exercises an international observers program was conducted as part of *Exercise Odysseus* and included 10 participants from nine countries.

The program provided insights into Australia's emergency animal disease response arrangements for implementing a national livestock standstill in the event of an outbreak of FMD. The program ran for three days and included observing the second national communication exercise, visiting a saleyard, and visiting Australian Government agencies and their incident management facilities.

Evaluating *Exercise Odysseus*

As with planning and conducting, evaluating *Exercise Odysseus* activities required a consistent and co-ordinated approach, developed, documented and agreed by the planning team and steering committee. The evaluation methodology was consistent with that being developed by other Australian emergency management agencies and shared through the National Security Knowledge and Lessons Management workshops conducted by the Attorney-General's

Department at AEMI. It was also consistent with the evaluation training provided by AEMI, attended by a number of staff involved in managing evaluation.

The evaluation approach adopted for *Exercise Odysseus* meant that each activity had an Evaluation Manager (a member of the exercise's planning team) who either conducted the evaluation or appointed and managed other staff to conduct the evaluation.

Independent evaluators, experienced in preparing for and responding to emergency animal disease incidents, were appointed to evaluate jurisdictional and national level exercises. These evaluators have previously held senior positions in agricultural agencies across Australia. The evaluator's observations and initial analyses, participants written and verbal feedback and the outputs from each activity were analysed by the Evaluation Working Group. More than 600 observations were recorded. These observations were grouped into themes, summarised and reviewed by the planning team to inform the final report being drafted.

Outcomes

Focusing on one aspect of a response for an extended period of time at a variety of levels (i.e. national, jurisdictional, local and agency) has had significant benefits to Australia's preparedness for managing a national livestock standstill and responding to an emergency animal disease outbreak. The exercise program resulted in government agencies and industry organisations exploring areas of preparedness that may not otherwise be explored. New contacts have been made and networks established.

Knowledge and understanding of how a national livestock standstill would be implemented and managed has been enhanced considerably. A range of issues that need further attention have been identified and are being addressed. Agricultural agencies recognise the importance of ongoing exercising and evaluation activities to ensure continuous improvement in preparing for and responding to agricultural incidents.

Exercise Odysseus was planned and implemented by the Department of Agriculture in conjunction with state and territory agricultural agencies, peak livestock and allied industry bodies and Animal Health Australia.

About the author

Tony Callan is the Director of the National Exercise and Evaluation Program, established by the Department of Agriculture in July 2013 to design, plan, conduct and evaluate *Exercise Odysseus*. Tony has been involved in emergency management for more than 30 years, initially as a volunteer with the NSW State Emergency Service, then as a District Emergency Management Officer in NSW. This is a position he held for eight years, prior to joining the Department of Agriculture in 2003.

A state plan for animal welfare in emergencies: Victoria's experience in developing and implementing a state animal welfare emergency plan

Cathy Pawsey, Department of Economic Development, Jobs, Transport and Resources

ABSTRACT

The tragic outcomes of the Black Saturday bushfires in 2009 highlighted, particularly for Victoria, the roles animals play in people's lives and the need for a state-wide, co-ordinated approach to managing animals and animal welfare in emergencies. Following the recommendations of the Victorian Bushfire Royal Commission the then Department of Primary Industries was tasked with developing and implementing a state plan for animals in emergencies. What started off as a plan to simply ensure a co-ordinated response to animal welfare in emergencies has led to a greater understanding of the importance of including animals in all aspects of emergency planning, response and recovery; not just for the animals themselves but for the safety and resilience of individuals and the community.

Introduction

In recent years there has been an increased understanding of the role played by animals in emergencies and the need to better consider them in emergency planning. But why is this so important that there is a need to change emergency arrangements that have been in place for many years and why did Victoria see the need for a state plan for animals?

Animals have always played a role in emergencies. Like humans, animals are sentient and suffer during times of emergency events. Until more recently they were mainly considered only during the recovery stage, when they needed assistance to either treat their injuries or end their suffering. There was little understanding that animals could play any other role in emergencies or impact on human survival, preparedness and resilience.

Traditionally, government agricultural departments have had a role in assisting farmers to deal with affected livestock as well as a wider rural recovery role in helping livestock producers get back to

business. The management of non-livestock species was generally left to other agencies such as local government, animal welfare organisations and veterinarians or veterinary organisations. Affected wildlife were managed by government environmental departments and wildlife groups. In times of evacuation, the advice to the community was usually that animals weren't welcome at relief or evacuation centres and should be left at home or the owner should make other arrangements.

In Victoria, prior to the Black Saturday bushfires in February 2009, such were the arrangements for animal welfare. Communications were generally informal and there was no agreed co-ordination between government (state or local) and non-government agencies such as the RSPCA or veterinary groups. When the Black Saturday bushfires hit Victoria the various government and animal welfare groups swung into action. However, they worked mainly as independent groups with no formal co-ordination between them.

Black Saturday resulted in the deaths of 173 people. More than 2 000 homes were destroyed or damaged, thousands of structures and over 10 000 kilometres of fencing were destroyed, and townships such as Marysville and Kinglake were almost obliterated. An unknown number of companion animals were killed, and it has been estimated that over 11 000 farm animals died (Victorian Bushfire Royal Commission 2010), with some reports placing losses significantly higher than that. The direct cost of livestock losses in the Black Saturday bushfires has been conservatively estimated in one report at more than \$18 million (Coll 2013). Such loss estimates don't take into account factors such as loss of animal genetic history or the impacts on the wider community and service industries.

During these fires the then Department of Primary Industries (DPI) initiated rural recovery operations involving assessment of 4 700 properties across 23 municipalities and operated several rural recovery control centres and a state rural recovery control centre.

Significant animal welfare work was also done by local government staff who were often first into the area, as well as by animal welfare agencies such as the RSPCA

and Victorian Animal Aid, Victorian Farmers Federation (VFF), Australian Veterinary Association (AVA), private veterinarians, volunteers and many others. The wildlife response was managed by the former Department of Sustainability and Environment (DSE) with the assistance of wildlife groups, veterinarians and volunteers. The range of stakeholders involved and lack of co-ordination meant there was significant duplication of effort in some areas and lack of assistance available in others.

While animals were not part of the scope of the 2009 Victorian Bushfires Royal Commission, the final report noted that 'the co-ordination of animal relief after the fires was fragmented' and that 'there does not appear to be a co-ordinated approach to animal welfare during relief operations. Improving agency co-ordination would help to provide more effective relief to all animals regardless of whether they are wildlife, stock, companion animals or pets.' The report also stated 'There is a good argument to address the welfare of all animals holistically in the Emergency Management Manual Victoria.' (Victorian Bushfire Royal Commission 2010)

The DPI undertook its own review following the Black Saturday bushfires and identified the need to clarify its role and improve collaboration and co-ordination of agencies for future delivery of animal welfare and rural recovery activities. This review identified that with the many different agencies contributing to animal welfare services, the various groups' activities, whether voluntary or funded, required co-ordination to enable an effective response to animal welfare issues, improve use of resources, and address gaps in the delivery of response and recovery efforts.

It was not just the issue of co-ordination of animal welfare response that was identified by the Victorian Bushfire Royal Commission. It identified 'that the strong ties people have with their homes and their animals have a big impact on their decision making' (Victorian Bushfire Royal Commission 2010). Tragically during Black Saturday, as well as other disasters around the world, people have lost or risked their lives because they wouldn't leave without their animals, have delayed leaving because they were trying to contain their animals to take with them or move them to lower risk area, or went back into danger areas to get their animals.

This link between people's attachment to their animals and their behaviour in an emergency was also being recognised overseas following natural disasters such as *Hurricane Katrina*. The United States *Pets Evacuation and Transportation Standards Act 2006*, introduced after the experiences of *Hurricane Katrina*, was a prime example of the type of legislative and policy change that has happened following major disasters around the world. This Act requires that state and local emergency preparedness authorities specify how they will accommodate families with pets or service animals in their emergency plans.

At least 63 per cent of Australians own one or more pets (Animal Health Alliance 2013). Research has found that the risk of failing to evacuate increases two-fold for each additional companion cat or dog in the household (Heath *et al.* 2001) and that 90 per cent of pet owners expect to take their animals with them if they leave (Taylor *et al.* 2013). Thus animals play a significant role in how at least half of the population responds in an emergency situation, particularly when evacuation is being called for.

The important role animals play in both individual and community resilience and recovery is becoming more clearly understood. The relationships that people form with their animals, be they pets, horses or livestock, can be as important as the human relationships they have; for some people, their animals are, in fact, more important. And it is not just pets that can have this impact. In addition to economic losses, the wellbeing of individuals and entire farming communities is often severely undermined by the loss of animals and impact on livelihoods.

The health benefits animals can have for humans are well known. They can be a buffer to stress (Allen, Blascovich & Mendes 2002). Finding out about the fate of their animals is often the first priority for evacuating people, and knowing that their animals are safe can be more important than the fate of their property. Having their animals with them can also help people cope, particularly the young and vulnerable members of the community.

For Victoria, it was agreed that it would be the role of the DPI to co-ordinate any animal welfare response and that there was a need for a state-wide animal welfare emergency plan to sit underneath state emergency arrangements.

The DPI took on the task of developing and implementing the state-wide plan for animals during emergencies. A state committee, the Victorian Emergency Animal Welfare Committee (VEAWC), was established consisting of major stakeholders including state and local government, the RSPCA, AVA and the Municipal Association of Victoria. The VEAWC was integral to the development and implementation of the *Victorian Emergency Animal Welfare Plan*¹ (VEAW plan).

It was agreed that the VEAW plan had to fit into the broader emergency management structures and plans and to take an all-species, all-hazards approach. The only exemption was emergency disease situations as there are already comprehensive national systems in place under the *Australian Veterinary Emergency Plan*² or AUSVETPLAN.

The VEAW plan was developed through workshops and consultation with relevant agencies. These workshops identified key stakeholders, their interactions and roles,

1 Victorian Emergency Animal Welfare Plan.
At: www.depi.vic.gov.au/fire-and-emergencies/animals-in-emergencies/victorian-emergency-animal-welfare-plan.

2 Australian Veterinary Emergency Plan.
At: www.animalhealthaustralia.com.au/programs/emergency-animal-disease-preparedness/ausvetplan/.

issues that needed clarification, and determined what a co-ordinated response should look like.

One of the key principles of the plan is that animals remain the responsibility of their owners who have a duty of care to their animals but that in times of emergencies owners may need assistance to meet those responsibilities.

Animal welfare needs were identified to include, but not be restricted to, the following:

- identification and management of evacuated animals
- management of lost or straying animals and reunification processes to get animals back to owners as quickly as possible
- identification and assessment of affected animals in an environment where movement restrictions might be in place
- animal treatment and/or humane destruction
- emergency containment
- co-ordination of donated fodder and other goods
- provision of water and feed.

The VEAW plan was approved by the secretaries of the DPI and DSE in September 2011 and is recognised under the Emergency Management Manual Victoria.³ It links into state emergency arrangements and provides the policy and principles for use in emergency animal welfare planning, response and recovery phases. It sets up a framework that can be used in any emergency event for any species or hazard and sets out the co-ordination arrangements as well as the roles and responsibilities of the agencies likely to be involved in any animal welfare response.

The final plan also includes identification of what animal welfare services are required and the roles and responsibilities of people in charge of animals, organisations and agencies. It describes a state-wide animal welfare unit that can be established during large-scale emergencies to manage the co-ordination of agencies, organisations and volunteer groups that are involved in the animal welfare response.

Following approval of the plan, work commenced to ensure the plan was implemented into state and local government planning. Communication tools were developed to advise all stakeholders of their role in the plan and to encourage the inclusion of animals into plans at all levels, from state emergency arrangements down to animal owners.

Considerable work has been undertaken with local governments to assist them to incorporate animals into their municipal plans. State-level guidelines for managing animals in relief or evacuation centres were developed, along with a template for a local government emergency management plan. Some councils were in fact developing their plans at the same time as the state-level plan was being created. Other

local governments have subsequently grouped together to create a plan that could be adopted across their region, ensuring consistency of planning and sharing of resources. The response by local governments in Victoria has been extremely positive with the majority actively working to ensure animals are appropriately included in municipal emergency plans.

Many animal welfare stakeholders are not experienced in emergency management practices or processes. So, while the VEAW plan articulates the roles and responsibilities of the various organisations and stakeholders, there is also a need for continued education, training and discussion around how an emergency response would work. Victoria maintains a register of organisations that have capability and capacity to assist with the animal welfare response in an emergency. This provides the ability to match the needs of response agencies with those who have the skills and resources to assist them.

The other important area of work has been engagement with the emergency management community to increase their understanding of the effect animals can have on human behaviour in an emergency. This includes the need to ensure animals are better incorporated in emergency planning, and that response plans enable a timely response to address animal welfare needs.

It is important that evacuation communication doesn't discourage people from leaving by excluding animals in evacuation messages. Information should be readily available on where to evacuate to with animals. There needs to be appropriate arrangements at relief and evacuation centres for the sheltering of animals and systems for management of displaced animals to ensure they can be returned to their owners as soon as possible.

The importance of addressing animal welfare needs to end suffering is a time-critical activity following bushfire, however the need to ensure human safety can delay access to affected areas for owners and responders. Victoria has recently reviewed traffic management protocols to directly reference animals as a key consideration when identifying early access needs after bushfires to ensure that animal welfare needs are addressed as a priority.

Government and emergency agencies don't need to do all the work. They can work alongside the community and community groups that pull together in emergencies to assist animal owners. Social media platforms have been a major factor in this by providing an easily-accessible forum, through websites and Facebook pages, that can connect affected communities with those able to assist them.

The need for better planning to include animals in emergencies has also been recognised at a national level. A series of workshops between 2011–2013 was held under the auspices of the Australian

³ Emergency Management Manual Victoria.
At: www.emv.vic.gov.au/policies/emmv/.

Animal Welfare Strategy⁴ with the assistance of World Animal Protection, an organisation well-known for their international work in relation to animals in emergencies. These workshops brought together relevant jurisdictional and animal welfare representatives to work on developing state and national plans for animals in emergencies.

From these workshops, the National Advisory Committee on Animals in Emergencies was established. Their mission is 'to work collaboratively to incorporate animals into emergency management planning at all levels of government and to encourage those responsible for animals in emergencies to accept their responsibilities' (National Advisory Committee on Animals in Emergencies 2013). The first action of the committee was to develop national planning principles for animals in disasters. These provide a tool that can be used to assist jurisdictions and agencies to create animal welfare emergency plans that meet their individual needs. The committee drew on the VEAW plan for guidance in developing the principles and recommended practices. The national principles have been widely accepted, with endorsement by both the National Animal Welfare Committee⁵ in 2013 and by the Australian–New Zealand Emergency Management Committee in 2014.

Where to now for Victoria?

The VEAW plan has been in place since 2011 and will be reviewed in 2015. Since the plan's introduction, there have been major changes to Victoria's emergency response structures, policy and legislation, and it is vital that the VEAW plan fits with the broader state arrangements and remains a contemporary plan that addresses state emergency animal welfare needs.

In the short time the plan has been in place, Victoria has come to a much better understanding of the role animals play in emergencies and of the need to ensure animals are included in emergency planning, not just to prevent animal suffering, but to improve the success of the broader emergency goals of human and community safety and resilience.

More work is also needed to identify how we can better encourage animal owners and businesses to include animals in their emergency planning, be more prepared and, when an emergency threatens or high-risk days loom, to take action early to protect themselves and their animals.

The plan has been implemented during numerous bushfires but, to date, Victoria has, thankfully, not needed to implement the full state-wide arrangements for animal welfare co-ordination. However, the experience of Black Saturday 2009 is still at the

forefront of planning. Recent emergencies along with the increasing understanding of the role animals play in emergencies will be used to refine the plan to ensure it meets the expectations of the community towards animal welfare and the need to protect human and animal life.

Further information

Victorian Emergency Animal Welfare Plan and Victoria's arrangements and communications resources: At: www.depi.vic.gov.au/animalemergencies (shortly moving to www.ecodev.vic.gov.au)

National Planning Principles for Animals in Disasters: At: www.australiananimalwelfare.com.au/content/pets-and-companion-animals/national-planning-principles-for-animals-in-disastersPCA

References

- Allen K, Blascovich J & Mendes WB 2002, *Cardiovascular Reactivity and the Presence of Pets, Friends, and Spouses: The Truth about Cats and Dogs. Psychosomatic Medicine*, 64, pp. 727–739.
- Animal Health Alliance 2013, *Pet ownership in Australia Summary Report*. At: <http://petsinaustralia.com.au>.
- Coll E 2013, *The Case for Preparedness: Quantification of production losses due to livestock deaths from disasters in Australia. World Society for the Protection of Animals*.
- Department of Primary Industries and Department of Sustainability and Environment 2011, *Victorian Emergency Animal Welfare Plan*. DPI Victoria.
- Heath SE, Kass PH, Beck AM & Glickman LT 2001, *Human and pet-related risk factors for household evacuation failure during a natural disaster. American Journal of Epidemiology*, 153(7), pp. 659–655.
- National Advisory Committee on Animals in Emergencies 2013, *National planning principles for animals in disasters*. At: www.australiananimalwelfare.com.au.
- Taylor M, Burns P, Lynch E, Burns P & Eustace G 2015, *The preparedness and evacuation behaviour of pet owners in emergencies and natural disasters. Australian Journal of Emergency Management*, vol. 30, no. 2, pp. 18–23.
- Victorian Bushfire Royal Commission 2010, *2009 Victorian Bushfires Royal Commission Final Report*. Melbourne: Government Printer for the State of Victoria. At: www.royalcommission.vic.gov.au/finaldocuments/summary/PF/VBRC_Summary_PF.pdf.


About the author

Cathy Pawsey is the Principal Policy Officer Animal Welfare, Department of Economic Development, Jobs, Transport and Resources.

4 Australian Animal Welfare Strategy. At: www.australiananimalwelfare.com.au/.

5 Animal Welfare Committee is a sub-committee under the then Primary Industries Ministerial Committee. At: www.nhmrc.gov.au/health-ethics/animal-research-ethics/animal-welfare-committee-awc.

Dealing with livestock affected by the 2014 bushfires in South Australia: decision-making and recovery

Dr Jeremy Rogers, Trent Scholz and Amelia Gillen, Primary Industries and Regions, share the findings of recent treatments to save livestock after bushfires. 

ABSTRACT

Primary Industries and Regions South Australia (PIRSA) staff are called on to assist in assessment and management of livestock affected by bushfires in South Australia. Methods and circumstances of euthanasia or treatments and decision-making at times of high stress can be complex with many variables. Some surviving animals will require monitoring and treatment. This paper describes the success rates and treatments in four cases in South Australia. It is helpful to advise producers of previous experience and results and give a qualified prognosis, especially when there is a temptation to destroy large numbers of livestock where some could be saved. There are significant psychological benefits for producers and communities when animals can be saved from being destroyed and some hope for recovery is given. Decisions involving euthanasia or management and treatment are made from day one through the weeks following a fire, but there are opportunities between days seven and ten for very effective medical and management intervention.

Background

Serious fires involving large livestock casualties occur approximately every ten years in South Australia. Internal reports following these fires address operational aspects but rarely decision-making processes, assessments and prognosis after treatment.

There are some Australian papers published on this subject, and some state agriculture websites that give information to producers and advisors, but the published information on Australian conditions is limited. Since large bushfire events only occur infrequently, lessons from the past may be forgotten. McAuliffe, Hucker and Marshall (1980), Carroll (1979),

and Hart (1986) published papers that reflect similar observations and are useful historical references.

In the summer of January–February 2014 there were five major fire events in South Australia and a number of livestock were affected, particularly at Eden Valley and Bangor. The majority of losses occurred when managed fires suddenly turned after an unpredicted change of wind direction, catching out producers who had believed that their stock were in protected locations. Case studies from these events show that medical treatments such as injectable and topical analgesics and antibiotics are available at moderate cost and these should be included in the assessment and prognosis mixture, where possible. Gee (1986) noted that long-acting antibiotics improved recovery and success rates in some sheep when given on a second follow-up visit to hospital mobs.

Method

This paper discusses some of the factors involved in decision-making by owners and advisors, and how decisions may be weighted in various situations. The lists and discussion are the conclusions of the authors and as a result of experience as firefighters and veterinarians, and following extensive debriefings with colleagues.

Fire response arrangements in South Australia

In South Australia the bushfire season is between November and April, with occasional serious fires outside of these times. Major bushfires tend to occur in January and February and property owners are advised to develop plans for livestock and property.

After and during a large fire event there is often confusion about who may be responsible or available to assist landowners in the assessment, treatment or euthanasia of animals. Concurrently there is often an outpouring of offers for assistance from professionals and concerned public. This situation can lead to confusion and sometimes inappropriate actions by well-meaning, but untrained or inexperienced people (Australian Veterinary Association).

PIRSA has the lead role in assisting and co-ordinating activities for livestock on properties affected by emergency events, including bushfire. Wildlife, pets and horses may also be included, and these animals may be assisted by other agencies. At times there is an overlap of roles and this requires managing, particularly in peri-urban areas (RSPCA Victoria). Decisions made by property owners about their livestock depend on a number of factors that may be unique to the owner, property and area. PIRSA has a key role in assisting property owners in the decision-making process and providing competent professional and timely advice. PIRSA also manages initial recovery activities such as emergency fencing, fodder and water supplies, and the collection and reporting of data on agricultural losses.

Psychological aspects

In the aftermath of a serious fire event the psychological health benefits to producers and their families of receiving some assistance, and some hope of survival for their animals, is greatly appreciated. This factor has been noted by earlier authors (e.g. Willson 1966, and Jenner 2007) who have been veterinary practitioners in rural communities. About seven to ten days after the fire event landowners may discover livestock they had overlooked, or may find damage to hooves and teats that was not previously obvious. By this time most firefighting efforts have stopped, people are exhausted, and the magnitude of loss can have a severe impact.

Dianne Phillips, Department of Environment and Primary Industries, Victoria states,

‘Another part of this equation is the transition in the owner’s mental state from the initial impact, where they really feel that they don’t have the time, energy or resources to deal with injured livestock; to that period a week or two later when they feel like they are getting a handle on it.’ (personal communication, Dianne Phillips DEPI Victoria 2014).

In contrast Gee (1986) noted that producers dealing with hospital mobs, where they had to continually revisit and destroy some animals over a prolonged period, found the process mentally very hard, and he reported he would have been ‘less lenient’ in some of his decisions to retain stock in hindsight.

Although not on the scale of the Victorian Black Saturday bushfires in 2009 where up to one million animal deaths may have occurred (RSPCA Victoria), the series of fires in South Australia from January to March 2014 was significant. Table 1 shows the livestock losses and Figure 1 shows the location of the large fires.

How decisions are made

Each property, person, event and situation will have a number of determinants about how decisions are made. Although the primary objective in the first stages of response is to deal with animal welfare considerations, other factors such as safety on a fire ground, owner psychological health and wellbeing, and

Table 1: Livestock losses in South Australia fires, January–March 2014.

Fire location/ name	Dates	Cattle and other	Sheep
Bangor	Feb–Mar 2014	80	1 800
Eden Valley	Feb 2014		2 700 ^a
Kiana (Eyre Peninsula)	Feb 2014	20	600
Rockleigh	Jan–Feb 2014		340
Clare	Jan–Feb 2014		40
Totals		100	5 480

^a Including sheep salvaged by slaughter.

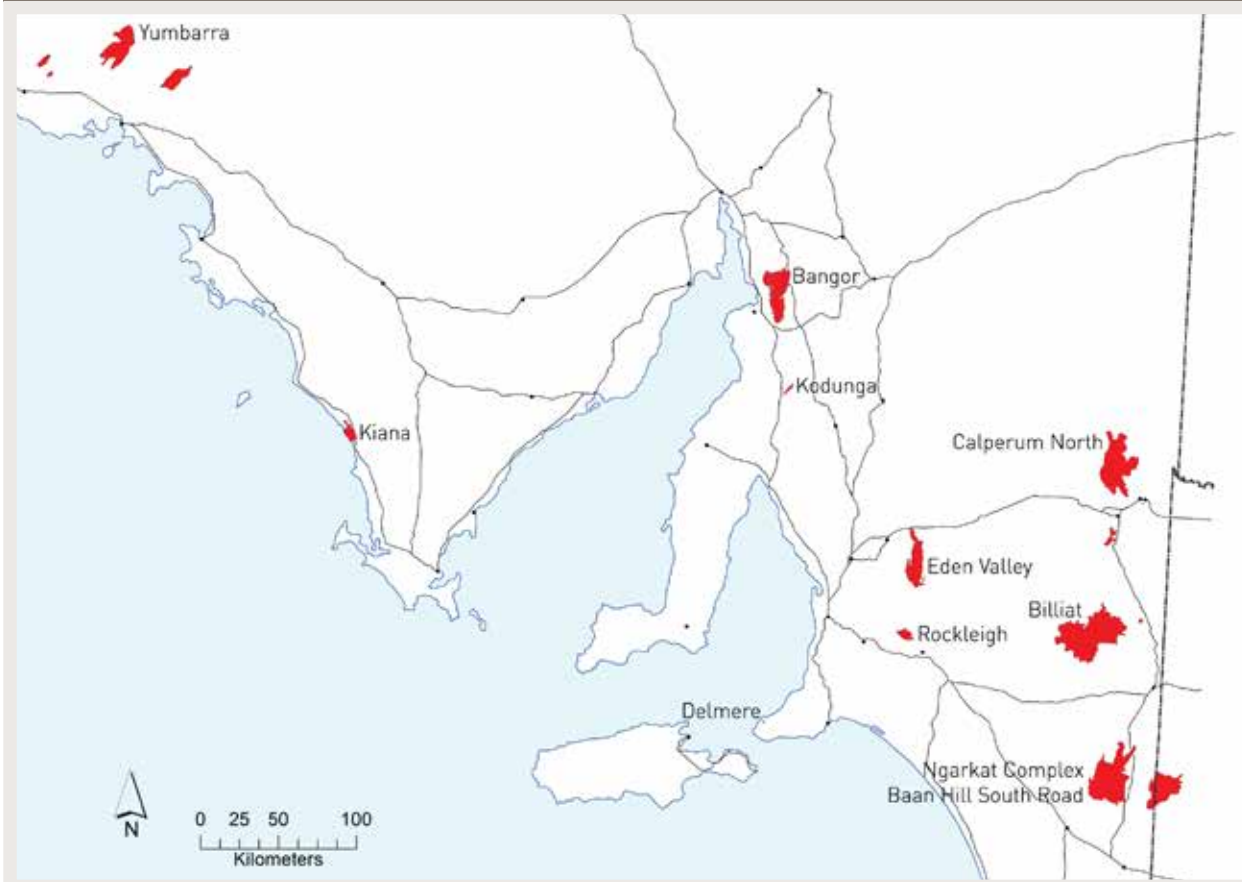
disposal options for dead or destroyed stock may be significant considerations.

Generally there are ten factors that influence decisions for treatment or destruction of fire-affected livestock immediately after a fire (one to ten days). These are:

1. scale of the event; is it unknown, large, medium, small
2. availability of PIRSA and other assisting resources such as experienced staff, vehicles, access, equipment, communications (also consider distances involved and time delays)
3. availability of owner or farmer resources such as holding yards, paddocks, feedlots, fences, sheds, water and food, shelter, time and labour, interest and ability, finances, medications and treatments
4. value of the stock, including the type (species), genetics, sex, age, emotional value¹, number involved, insurance cover²
5. ability and opportunity to examine stock, particularly where stock may be burnt in parts of the body that are difficult to see without close individual inspection
6. timing of decision-making; is it immediately after the event, within a few days, one week, two weeks
7. weather and forecasted weather
8. animal prognosis with or without treatment, which includes treatment or inspection frequency and the long-term prognosis
9. other options such as salvage slaughter and agistment
10. disposal options such as a need to wait for a short period until some livestock are destroyed. Badly injured animals must be destroyed immediately, but less severely damaged animals may need to be retained until suitable disposal options are available.

1 The emotional value of animals to their owners can be hard to quantify. Pets for example maybe dealt with in a very different way to commercial animals, and most livestock producers have empathy for their livestock. In addition, delaying a decision to destroy animals can have either a negative or positive value depending on the circumstances.

2 If livestock are insured this may affect the owner’s decision-making. Careful records of conversations and numbers of animals destroyed should be kept in these circumstances.

Figure 1: Map of South Australia's southern coastline where major fires occurred January–February 2014.

What decisions to make

Making decisions will be highly variable depending on the individuals and the factors listed. Most PIRSA inspectors attempt to categorise affected animals into 'unaffected', 'mildly affected', 'severely affected', and 'very severely affected' groups and deal with these groups accordingly. Much will depend on the first three factors in the previous list but some producers following large fires simply do not have the time or resources to care for even slightly affected animals.

There are excellent resources available to guide the initial assessment following a fire, for example 'Assessing sheep after a fire'³ on the Department of Primary Industries website and similar documents on other Australian state government websites. PIRSA has a brief assessment checklist as part of its *Bushfire Plan for Sheep* and Braddon (2015) has a summary table offering more detail. Breeding animals (e.g. rams and ewes) should be assessed with respect to their ability to breed and damage to genitalia. These guides are useful particularly immediately following a fire, but they become less useful as time goes by, particularly if food, water, shelter and appropriate pasture are available. By day ten after a fire a different matrix should be developed that includes some treatments. By this time

most severely affected animals will have died or been destroyed and producers need assistance to evaluate stock survivors. At this point the list of factors might include:

- the scale of the event
- available facilities such as food, shelter, and yards
- medical treatments available and likely prognosis
- labour availability
- weather conditions
- psychological considerations for producers.

Who makes the decisions

An automatic response to this might be: 'the producer', but often this is not the case. People in high-stress situations are guided by advice from a trusted source and may not act wisely, and the source may not have appropriate knowledge or experience or awareness of all factors. Decisions taken by untrained people may result in needless destruction on one hand and unnecessary suffering on the other (Willson 1966) Animal welfare can be open to differing interpretation and can be ameliorated by treatment options and some experience is required to find the right balance between clear and quick decisions, and postponing decisions to a later time.

³ Assessing sheep after a fire. At: www.depi.vic.gov.au/fire-and-emergencies/recovery-after-an-emergency/livestock-after-an-emergency/assessing-sheep-after-a-bushfire.

Case studies

No resources for hospital mob

A producer with a large number of sheep had the entire grazing property burnt and most yards and fences were destroyed. Sheep were mustered and confined to temporary yards and drafted according to visual signs of fire damage. All affected sheep were destroyed (over 100) as the owner did not have the time, willingness, or resources to establish a hospital mob. Some affected sheep had mild lesions. In this case, although much could have been done to treat and salvage some sheep, conditions, resources and economics did not allow this. This process is more common in rural areas that involve large numbers of sheep, where extensive amounts of land are burnt, and there are fewer options for transport and agistment.

Treatment saves injured sheep

A producer in the Murray Bridge area with approximately 200 surviving, young, pregnant merino ewes was able to move them to an unaffected area where food, water and shelter was available. A number of injured sheep had been destroyed by the producer and he had drafted 60 affected sheep out of the main mob one week after the fire believing that most would require destruction. The producer was quite despondent as these were valuable young sheep and would have a major impact on his livelihood. No insurance was available. An inspector looked at 60 sheep and although many had severe burns to their legs, inguinal areas and perineum, only 16 were selected for treatment using analgesics, antibiotics and topical treatments of emollient cream, disinfectant and fly repellent. The remaining 44 sheep were released with instructions for the owner to closely monitor them. The owner reported that the treated sheep appeared much improved within 24 hours of the treatment. Retreatment of other animals occurred in decreasing numbers over the following two weeks with only two sheep being destroyed while the rest recovered fully.

At shearing time the owner reported that sheep that had been burnt were difficult to distinguish from those not burnt, and most had produced and were rearing lambs.

Small minority may survive even without treatment

A producer with 200 young ewes was absent from an agistment property at the time of the fires. PIRSA staff attended after notification by the Country Fire Service and members of the public. They found 68 badly affected sheep that were destroyed immediately. Only 16 of the original 200 sheep survived without any attention even though affected by the fire, although they were provided with food and water. The sheep could not be mustered for treatment as no facilities were available. This demonstrates that some sheep will survive with minimal attention. However, survivors should be closely observed and sheep that are not recovering should be humanely destroyed.

Nursing calves protect heifers' teats

A farm had 15 pregnant Santa Gertrudis stud heifers suffer mild to severe burns to teats and udders after standing on burnt ground that was still hot, although not hot enough to damage their hooves. Cows with calves-at-foot in the same group did not suffer damaged teats and the owner attributed this to the fact that nursing calves protected the teats. The heifers were moved to an agistment property and inspected ten days after the fire. Topical cream was applied liberally to affected areas. The owner originally thought that all the animals would need to be slaughtered as the teat damage appeared too severe. However, after two weeks and two topical treatments, all the heifers had improved. Later, seven of the 15 heifers successfully calved and were able to rear their calves. These reflect the results previously described in the literature (Morton *et al.* 1987).

What kills livestock in fires

Animals and humans are damaged in fires from three main sources:

- radiant heat producing death or significant burns
- smoke and heated gas inhalation
- shock, pain, tissue necrosis, dehydration and multi organ failure.

There is often a combination of these factors and each can occur to different extents or severity. Smoke inhalation can kill or severely injure without much apparent burn injury and may affect some species (such as equines) more than others (Madigan 2011).

Most severely affected animals will die or need to be destroyed within the first 12 to 72 hours after the fire. This would be due to severe burns to the head and limbs, animals being recumbent (unable to stand), and those that are reluctant to move or unable to access feed and water.

Conclusion

The four case studies illustrate that there is no simple formula for making decisions about individual animals or groups of animals in the period seven to ten days after a fire. Decisions and advice should be given carefully after an inspection of the livestock. This can be problematic depending on facilities available. Simple

decision-making matrices may be helpful immediately after a fire event, but should be interpreted with care. Some decisions about euthanasia need to be made quickly and without the benefit of complete examinations as animals may be unrestrained. Other euthanasia decisions are obvious for animals that are moribund, recumbent, or have damage that is unlikely to be treated. At other times even mildly damaged livestock may need to be destroyed when the owners do not have the capacity to care for or treat them. Often the farm infrastructure will be damaged to the extent of making care in the short-term very difficult.

Whenever PIRSA staff are involved in the euthanasia of animals in fire events, careful records of the conversations with producers and the numbers of animals involved are kept. Since euthanasia is an irreversible decision, it may be wiser to postpone this decision at times when animal welfare and circumstances permit, at least for a proportion of the animals involved. In the immediate aftermath of a serious fire there is sometimes a tendency to destroy even mildly affected livestock, without close examination, or consideration of other options. Obviously these decisions rest on the premise that there will be responsible management of these animals, and appropriate care in a safe location.

New topical analgesics are becoming available at a modest price, and pain relief for burnt livestock appears to be an area that has been underserved in the past, and has the potential for great benefits and improvements in survival rates.

Treating animals need not be costly or complex but this option does require appropriate feed, water, shelter and facilities to be available and a proportion of livestock that do survive may be unsuitable for breeding. However, there are good benefits to producers and their families from offering some hope for some animals after a traumatic event when so much damage has been sustained. When producers see animals recovering from injuries with relatively minor treatments, it gives them great encouragement.

References

- Braddon E 2015, *Response to bushfires: NSW perspective. Proceedings of the Combined Australian Cattle Veterinarians & Australian Sheep Veterinarians Annual Conference, Hobart 2015*, pp. 66-69.
- Carroll SN 1979, *Some observations on the destruction or treatment of burnt stock in the wake of bushfires. Veterinary Inspectors of NSW 1979 Conference Proceedings. 62nd Annual conference pp. 85-89. At: www.flockandherd.net.au/archive/1986%20Proceedings/pages/image93.html*.
- Dianne Phillips, Regional Veterinary Officer, Bairnsdale. Department of Primary Industries and Environment, Victoria, editorial comments and advice.
- Gee CD 1986, *Involvement of veterinary inspectors in bushfire situations. Veterinary Inspectors of NSW 1986 Conference Proceedings. 69th Annual conference pp. 259-271. At: www.flockandherd.net.au/archive/1986%20Proceedings/pages/image261.html*.
- Hart KG 1986, *Bushfires – Administration and Lessons. Veterinary Inspectors of NSW 1986 Conference Proceedings. 69th Annual conference pp. 259-271. At: www.flockandherd.net.au/archive/1986%20Proceedings/pages/image273.html*.
- Jenner, M 2007, *The psychological impact of responding to agricultural emergencies. Australian Journal of Emergency Management vol. 22, no. 2, May.*
- McAuliffe PR, Hucker, DA & Marshall, AN 1980, *Establishing a prognosis for fire damaged sheep. Australian Veterinary Journal vol 56, March.*
- Madigan J. *Wildland fire and livestock-Preparedness and response-including approach to mass casualty scenarios. Proceedings of the AVA Annual Conference, Adelaide 2011.*
- Morton JM, Fitzpatrick DH, Morris DC, & White MB 1987, *Teat burns in dairy cattle – the prognosis and effect of treatment. Australian Veterinary Journal vol. 64, no. 3, March, 1987.*
- Willson RL 1966, *Assessment of bush fire damage to stock. Australian Veterinary Journal vol. 42, April.*
- NSW Department of Primary Industries 2013, *Assessing bushfire burns in livestock. January 2013 Primefact 399 second edition. At: www.dpi.nsw.gov.au/agriculture/emergency/bushfire/animals/assess-bushfire-burns-livestock.*
- RSPCA Victoria 2009, *Submission to the 2009 Victorian Bushfires Royal Commission. At: www.royalcommission.vic.gov.au/Submissions/SubmissionDocuments/SUBM-002-021-0245_R.pdf*.


About the authors

Dr Jeremy Rogers is a Senior Veterinary Officer with PIRSA. His role includes managing the Bovine Johne's Disease Program, disease surveillance and emergency management training and responses. Jeremy has been a Country Fire Service volunteer for 20 years.

Trent Scholz is an Animal Health Officer with PIRSA, based at Port Augusta. He has attended the aftermath of a number of large bushfires in Victoria and South Australia. He works on various animal health and disease surveillance programs in regional and remote SA and is a member of the Country Fire Service.

Amelia Gillen is an Animal Health Officer with PIRSA based at Murray Bridge. Amelia's work involves disease surveillance, regulatory activity at saleyards, and emergency animal disease preparedness and training. Amelia has been a member of the National Rapid Response Team for two years, and is a member of the South Australia First Response Team.

The preparedness and evacuation behaviour of pet owners in emergencies and natural disasters

Dr Melanie Taylor, Erin Lynch, Dr Penelope Burns (University of Western Sydney), and Greg Eustace (RSPCA Queensland). 

ABSTRACT

This research describes the preparedness and the actual, or anticipated, evacuation behaviours of a sample of 352 pet owners in Australian who experienced a range of natural disasters or emergencies. Three quarters experienced a bushfire or flood (42 per cent and 33 per cent respectively) and around a third (34 per cent) evacuated their homes.

Of those who evacuated, 29 per cent did so in less than one hour and 58 per cent returned within two days. Over two-thirds (69 per cent) stayed with family or friends when they evacuated. Many people evacuated with multiple combinations of pets. The majority of those who evacuated kept some of their pets with them (81 per cent) and 15 per cent left some pets behind; either enclosed in the home, released to escape, or unable to find/catch. Around the time of evacuation 42 per cent sought some form of immediate assistance, help or advice, with evacuation of their pets. Most turned to neighbours and friends (30 per cent), social media (9 per cent), or emergency services (8 per cent).

In general, around a third of the sample felt they were 'not really prepared' or were 'unprepared' for the emergency event. Of those who reported they were prepared, around 70 per cent had planned to keep all their pets with them if they evacuated.

The results of this study highlight the complexity of pet composition and the requirement for detailed household evacuation planning and early enactment of plans. In addition, the need for responsible pet ownership and pet-friendly destinations on evacuation was a clear requirement, with decisions to evacuate being influenced by this.

It is hoped that the results of this study will provide a useful reference for emergency management agencies and aid planning and engagement with pet owners.

Introduction

Much of what is known about pet owner behaviour in emergencies in an Australian context is informed by limited or anecdotal evidence, or media reporting of the actions, or inactions, of individuals. In the international disaster literature pet ownership is regarded as a risk factor most consistently associated with evacuation failure (Brackenridge *et al.* 2012, Heath, Voeks & Glickman 2001) and linked to unsafe acts motivated by a desire to rescue animals that have been left behind (Heath, Voek & Glickman 2000, 2001; Zottarelli 2010).

Generally, attachment to pets is high, with many people considering pets as members of the family (White 2012). The strength of this attachment is never more apparent than in the event of pet loss in disaster, with reports of prolonged and often unnoticed or unsupported grief (Blazina, Boyra & Shen-Miller 2011) and poor psychological outcomes, especially in the event of forced abandonment of pets during evacuation (Hunt, Al-Awadi & Johnson 2008). The roles pets and other animals may play in supporting post-emergency functioning and resilience-building are also vital. For these reasons, as well as the implications for public and responder safety during emergency, it is critical that they are considered in emergency management planning.

The primary emergency event, internationally, that led to increased attention to animal emergency management was *Hurricane Katrina* in 2005, in which more than 50 000 companion animals were abandoned and 15 000 were rescued. Irvine (2009) provides a compelling overview of the scale of the animal emergency management challenge and the film 'Dark Water Rising' (Shiley 2006) provides sobering documentary evidence. *Post Hurricane Katrina* research indicated that 44 per cent of non-evacuees who chose not to evacuate did so because they didn't want to leave their pets. Soon after *Hurricane Katrina* the United States Senate passed the *Pets Evacuation and Transportation Standards Act 2006*, which requires states seeking Federal Emergency Management Agency assistance to make provisions for pets and service animals in their plans.

In Australia there is no equivalent requirement. Pet ownership levels in Australia are among the highest in the world, with around 63 per cent of households

owning a pet (Animal Health Alliance 2013). The need to consider animals and their owners in emergencies has been increasingly accepted in Australia, prompted by large-scale disasters and reports from the 2003 ACT Bushfires Inquiry, 2011 Queensland Flood Commission of Enquiry, the 2009 Victorian Bushfires Royal Commission, and the 2013 Tasmania Bushfires Enquiry. These reports all included references to the management of animals. Many emergency services organisations and other stakeholders involved with emergency management and animal welfare now have strategies and resources available to assist animal owners.

Although the requirement to address a range of issues associated with the management of animals and their owners in emergencies and disasters is now acknowledged in Australia there is a lack of systematic data or evidence available to inform these activities. New Zealand has a small body of research, with one study (Glassey 2010a) reporting that a substantial proportion of pet owners (56 per cent) would not evacuate without their pets and a larger proportion still (81 per cent) would be more likely to comply with evacuation if there were evacuation shelters that could cater for pets. This led to recommendations being made to improve animal emergency management (Glassey 2010b). In Australia research in this area is currently non-existent, although there is increasing discussion with Thompson (2013) positing that the strong bond people have with animals could be used to promote disaster preparedness. This current study was undertaken to assist in addressing the gap in Australian research. The study explores a range of issues around Australian pet owner emergency preparedness for their households and their pets, their actual or anticipated evacuation behaviours in the context of an experienced disaster or emergency, the sources of information used to gain assistance around the time of evacuation, and lessons identified from the experience.

Method

A questionnaire was developed to assess pet owner characteristics, emergency and evacuation contexts, evacuation experiences and preparedness. To meet study inclusion criteria respondents needed to have experienced 'a disaster or local emergency in which they evacuated, or considered evacuating their home', to have been a pet owner at the time of the disaster, and to be aged over 18 at the time of completing the survey.

The survey was administered using the online survey-hosting platform *SurveyMonkey*TM. A link to the survey with a short invitation to participate was distributed using a combination of social media (Facebook and Twitter), online and print media, and a University of Western Sydney media release. The link on social media was reposted by a number of animal rescue and similar special interest pages. Data were collected over an eight-week period (22 Jan – 22 Mar 2013).

The study was approved by the University of Western Sydney Human Research Ethics Committee (Approval No. H9993).

Data were analysed using IBM SPSS software (V.21). Simple descriptive statistics, frequencies and cross-tabulations, have been reported here to produce a concise overview of the survey findings.

Results

Sample characteristics

In total, 352 pet owners met the study inclusion criteria and are represented in the analysis. The majority of the sample was female (89 per cent) and 86 per cent were aged between 25 and 64 years.

Respondents came from all states and territories with the largest groups from Queensland (51 per cent) New South Wales (25 per cent), and Victoria (12 per cent). Two-thirds of the sample lived in suburban and rural areas (35 per cent and 32 per cent respectively).

Pet ownership

Respondents were asked about the composition of their pet ownership and their attitudes to their pets. At the time of the emergency, 79 per cent of respondents owned one or more dogs and 49 per cent owned one or more cats. Figure 1 shows the breakdown of the numbers of pets owned by respondents.

Figure 1 shows the complexity of household pet ownership. In total, only 18 per cent of respondents owned one pet; the majority of those (72 per cent) owning a dog. Just over a quarter (26 per cent) owned only one animal type, but multiples of them, and the remainder (57 per cent) owned multiple types of animal. A small proportion of respondents (4 per cent) were running animal-related home-based businesses or enterprises that involved large numbers of animals. These were mostly breeding or rescue and rehoming enterprises, and a few respondents were wildlife carers.

Overwhelmingly, pet owners felt a high degree of responsibility for their pets and a strong attachment to them (with mean ratings of 9.84 and 9.76, respectively on 10-point scales for each). Most respondents strongly agreed that they considered pets to be part of the family (86 per cent), that their pets made them happy (86 per cent), and that they were great companions (88 per cent).

Disaster and evacuation contexts

As data in this study do not relate to a single specific disaster or emergency event, evacuation behaviours are reported in relation to a range of hazard types. Figure 2 summarises the disaster and emergency situations encountered by respondents and their pets, i.e. the single event about which they provided information in the survey. This figure also includes data on the proportions that did/didn't evacuate in that event.

With regard to the timing of these events, more than half (56 per cent) occurred since 2011, and more than 70 per cent since 2009. Most respondents provided

Figure 1: Pet ownership composition at the time of the disaster.

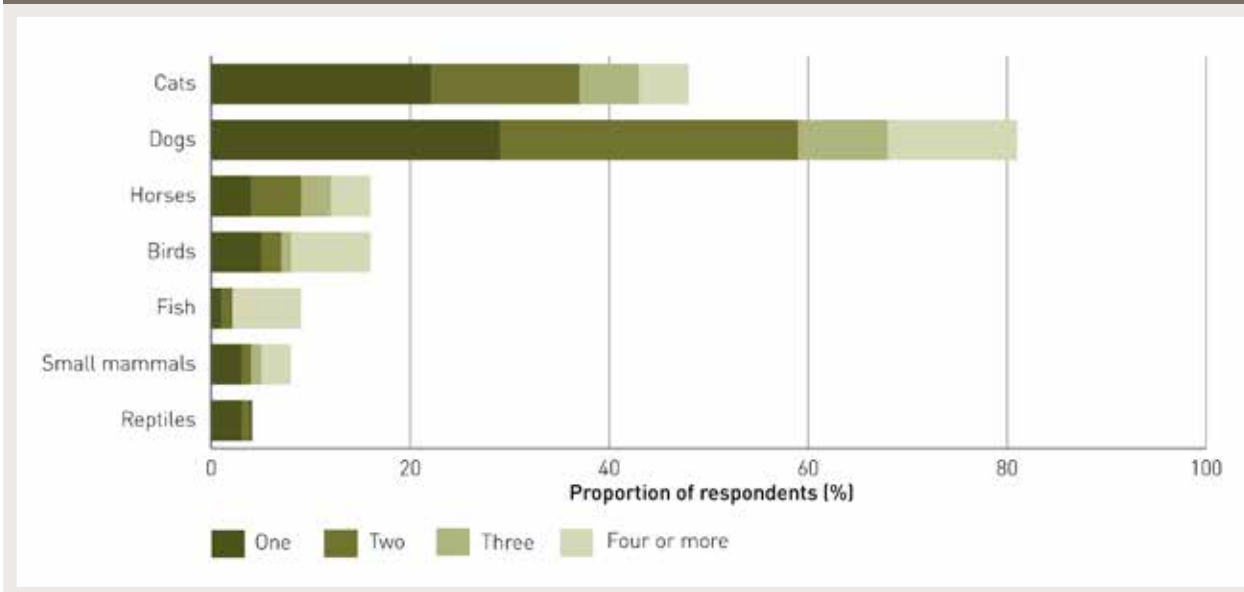
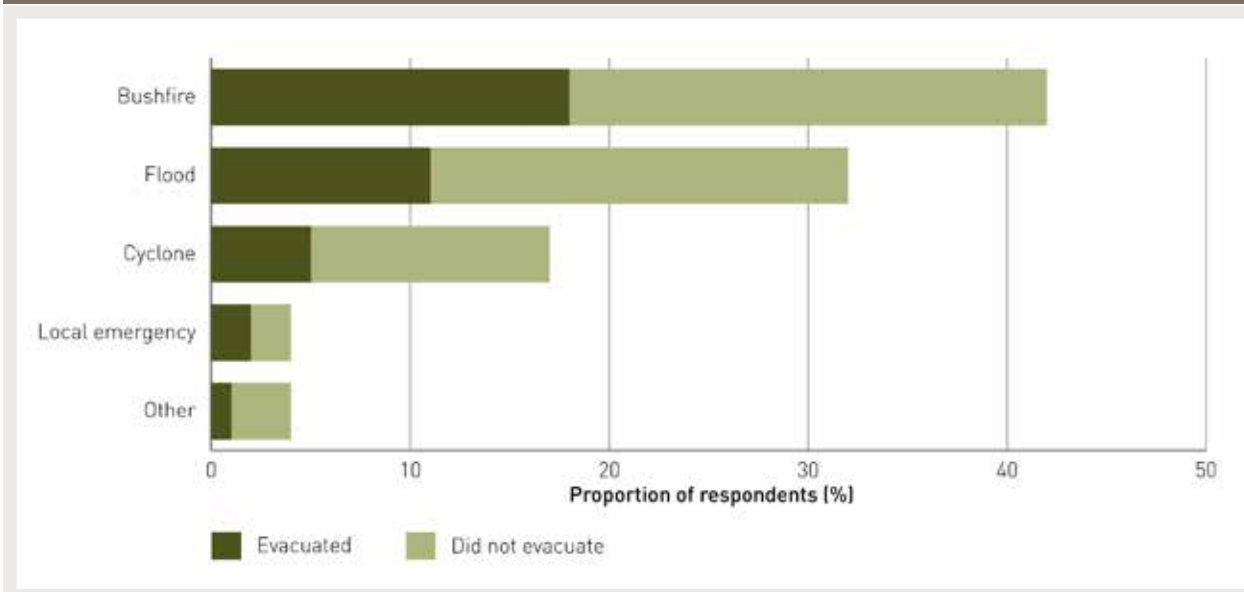


Figure 2: Disaster and emergency situations reported by respondents and the proportions that did/didn't evacuate.



details of the events they experienced, with the 2011 southeast Queensland floods, 2011 *Tropical Cyclone Yasi*, 2013 Bundaberg floods, and 2009 Black Saturday bushfires mentioned most frequently.

In response to these events, 31 per cent of respondents evacuated with their entire household, 6 per cent partially evacuated, 36 per cent prepared to evacuate but didn't actually go, and 27 per cent didn't evacuate or prepare to evacuate. Of those who reported that they were advised by authorities to evacuate (31 per cent) 70 per cent did so.

Just over a quarter of respondents (27 per cent) had less than three hours to evacuate. As would be expected, the hazard type influenced the amount of time available to evacuate; 60 per cent of those who

experienced a local emergency and 23 per cent of those who experienced a bushfire had less than one hour to evacuate, whereas of those who experienced flood, 18 per cent had between three hours to a day to evacuate, and 24 per cent of those who experienced a cyclone had more than a day.

Over a half of respondents who evacuated (58 per cent) were away from home for less than two days, and a fifth were unable to return for two-five days (21 per cent), or more than five days (21 per cent). Again, the hazard type influenced how long participants were away from home. Approximately two-thirds of those who evacuated due to bushfire or cyclone were able to return in less than two days (67 per cent and 64 per cent, respectively) compared to only 37 per cent who experienced flood. Flood-impacted pet owners

were the most likely to be away from home for more than five days (34 per cent) compared to those who experienced bushfire and cyclone (14 per cent and seven per cent respectively).

Evacuation experiences

A total of 122 respondents evacuated (fully or partially) and data in this section relate to this subsample.

When people evacuated their homes many things happened to their pets. Figure 3 summarises what happened to the animals.

Respondents were asked why some pets weren't evacuated with them. Comments included respondents not being able to catch or contain them, being told by emergency services personnel that they could not take their pets with them at the time of evacuation, or that they wouldn't be able to take them to evacuation centres, that it was too hard to take them, that they had died, and that there were too many to take.

Over two-thirds of respondents who evacuated stayed with family or friends (69 per cent), and smaller proportions stayed at an evacuation shelter (five per cent), hotel/guest house (four per cent) or showground/campsite (three per cent). Those who stayed elsewhere (18 per cent) mentioned staying in cars/utes, with neighbours, and at schools or workplaces; some reporting they stayed in cars because evacuation shelters wouldn't accept pets.

When asked about how owning pets influenced evacuation, significant proportions of the sample strongly agreed or agreed that having pets influenced where they went after evacuation (81 per cent), their decision about whether to evacuate (72 per cent), increased the stress of evacuation (68 per cent), and the mode of transport they used (66 per cent). In

addition, having pets influenced the number of trips made to and from home during evacuation (54 per cent) and slowed down the speed of evacuation (43 per cent).

Preparedness

Those who evacuated were also asked if they contacted anyone for immediate assistance (help or information) with evacuation of their pets. More than half (58 per cent) contacted no one, 30 per cent contacted neighbours or friends, nine per cent asked for help via social media, eight per cent contacted emergency services, and the same proportion contacted local council, local veterinary clinics and online sources for help, (six per cent for each).

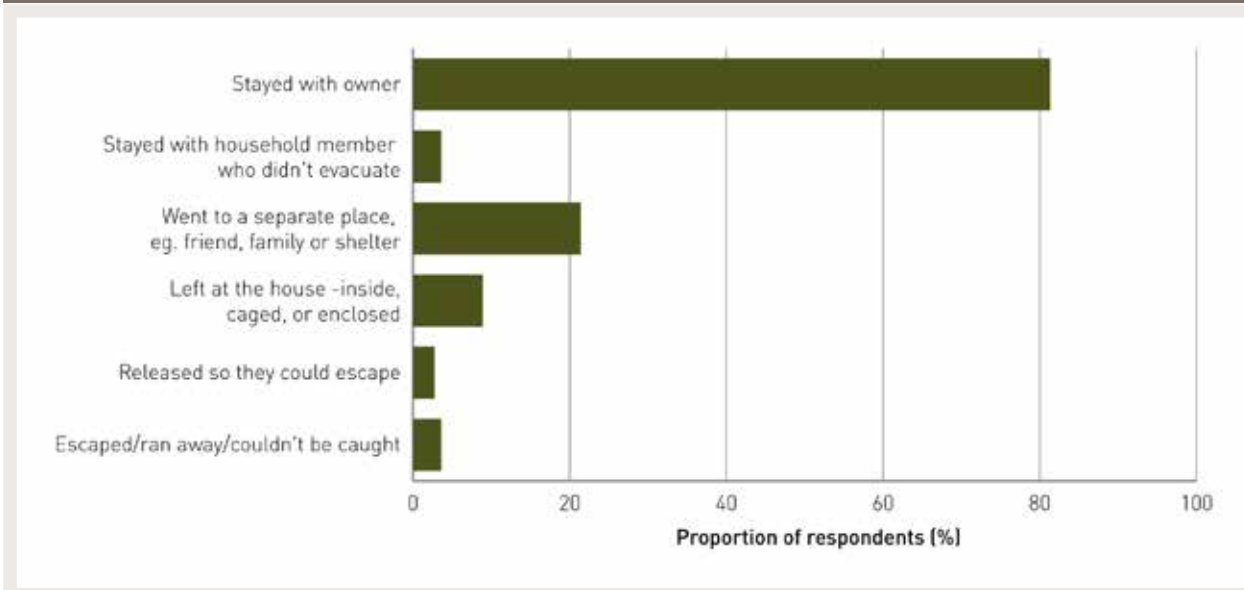
Respondents were asked to reflect and report on how prepared they felt they were prior to the disaster/emergency event. Figure 4 summarises these data.

When asked about consideration of pets in evacuation planning, high proportions of those who reported being 'very' or 'somewhat' prepared had considered all their pets (96 per cent and 87 per cent respectively). Similarly, most owners planned to keep 'all' their pets with them when they evacuated (74 per cent), a further 21 per cent planned to keep some with them and take others to a different location, and only one per cent did not plan to take their pets.

Discussion

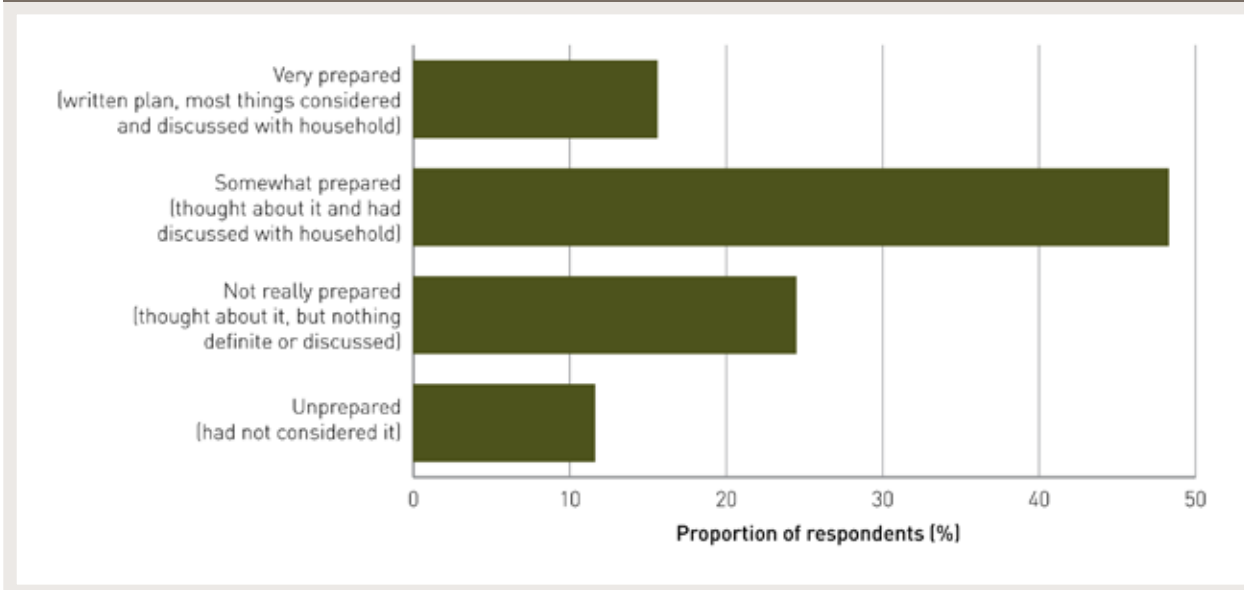
This study provided details of pet owner experiences during Australian emergency events; their preparedness, and their actions. It is clear that household pet composition is often complex, with the majority owning multiple animals of multiple types. In a disaster or emergency situation this translates to complex evacuation scenarios, with different

Figure 3: What happened to pets when households evacuated.



Note: due to the complex composition of pet ownership respondents could select multiple categories.

Figure 4: Reported level of preparedness prior to the disaster/emergency.



pets with different needs; practical considerations, transportation, and destinations. With a third of the sample reporting they were unprepared before the disaster, this emphasises the need for higher levels of preparedness, planning, and discussion.

The experiences reported in this study suggest that certain hazards are more likely to result in different challenges for pet owners. Time to evacuate is likely to be shorter for bushfires and local emergencies, requiring unimpeded execution of evacuation plans, whereas time away from home is likely to be longer in the context of flood, meaning that the probability of leaving pets at home with food for a few days is less likely to be an acceptable strategy.

Clearly all disasters are different and official advice should still remain as *'be prepared, act early, be considerate and act safe'* (Australian Government 2014). However, the reality is that animals do get left behind. In this study approximately 15 per cent of the sample left some animals at home either because they were deliberately left in the home or they were released to escape, or they could not be caught. Perhaps more concerning is that comments indicate some households only partially evacuated so that they could leave someone behind to take care of the animals whilst the rest of the household evacuated.

The influence of pets on decision-making and the process of evacuation cannot be underestimated. Data from this study indicates that for the vast majority of pet owners their pets influence where they go and their decision to evacuate. In addition, pets may determine the mode of transport they use, the time it takes to leave, the number of trips that are needed, and increases the overall stress of evacuation. Even with these encumbrances pet owners will still take risks to take, or go back and get, their animals. The consequences of not taking such action are too unbearable to contemplate for many.

Finally, the importance of family and friends to help support evacuees with pets is highlighted in this study. No doubt this is an important resource for all those who need to leave their homes in an emergency. However, pet-friendly destinations are a necessity for pet owners. Most people plan to take their pets if they evacuate and do take their pets with them. If options are not available to accommodate pets then owners will either sleep in cars or other makeshift places, or will simply decide not to evacuate.



Image: The Newcastle Herald. Permission granted.

A Newcastle firefighter reunites owner and his pet. Understandably, emotional attachments influence the decision-making and evacuation actions of people.

Strengths and limitations

This study provides useful Australian data to inform those involved in the management of animals and their owners in disasters and emergencies. The sample size is sufficiently large to provide confidence in the

data across a range of different hazards and provide insights into pet owner levels of preparedness for their pets, the rationale for their decision-making, and their priorities and considerations for evacuation and relocation. However, the study also has limitations. The sampling strategy for the study was uncontrolled and self-selected, which can result in biases and cannot be considered representative of all pet owners. Clearly many respondents were extremely attached to, and passionate about, their pets; 'animal lovers' more than simply 'animal owners'. However, from an emergency management perspective such people are important, as these are the people most motivated to protect their pets and potentially the most likely to take risks to evacuate with them and return for them. It is also clear that most pet owners consider their pets as part of the family (Glassey 2010a) and data in this study does not differ significantly to suggest this sample is more biased in this regard. Pet ownership is, in most part, an optional undertaking. Therefore it should be expected that the majority of pet owners will feel committed and attached to their animals.

Conclusion

This study has provided a snapshot of Australian pet owners and their behaviours in, and preparedness for, emergencies. The findings of the study should inform planning by emergency management agencies and other stakeholders, on the behaviours and expectations of pet owners, on animal management needs in evacuation centre planning, and on future community engagement campaigns.

References

- Animal Health Alliance 2013, *Pet ownership in Australia 2013 Summary*. Canberra. At: <http://petsinaustralia.com.au/wp-content/uploads/2014/01/Pet-Ownership-in-Australia-2013-Summary-ONLINE-VER.pdf>.
- Australian Government 2014, *Attorney-General's Department, Australian Emergency Management Institute. Pets in Emergencies Action Guide*. At: www.em.gov.au/Documents/Action_Guide_Pets.pdf.
- Brackenridge S, Zottarelli LK, Rider E & Carlsen-Landy B 2012, *Dimensions of the human-animal bond and evacuation decisions among pet owners during Hurricane Ike*. *Anthrozoos*, vol 25(2), pp. 229-38.
- Blazina C, Boyraz G & Shen-Miller D 2011, *The Psychology of the Human-Animal Bond: A Resource for Clinicians and Researchers*. Springer, New York, NY.
- Fritz Institute 2006, *Hurricane Katrina: perceptions of the affected*. San Francisco, CA. At: www.fritzinstitute.org/PDFs/findings/HurricaneKatrina_Perceptions.pdf.
- Glassey S 2010a, *Pet owner emergency preparedness and perceptions survey report: Taranaki and Wellington Regions*. Wellington: Mercalli Disaster Management Consulting.
- Glassey S 2010b, *Recommendations to enhance companion animal emergency management in New Zealand*. Wellington: Mercalli Disaster Management Consulting. At: <http://training.fema.gov/hiedu/docs/glassey%20-%20report-recommendations%20to%20enhance%20companion%20animal%20em%20in%20nz.pdf>.
- Heath SE, Voeks SK & Glickman LT 2000, *A study of pet rescue in two disasters*. *International Journal of Mass Emergencies and Disasters*, vol. 18(3), pp. 361-81.
- Heath SE, Voeks SK & Glickman LT 2001, *Epidemiologic features of pet evacuation failure in a rapid-onset disaster*. *Journal of the American Veterinary Medical Association*, 218, pp. 1898-1904.
- Hunt M, Al-Awadi H & Johnson M 2008, *Psychological sequelae of pet loss following Hurricane Katrina*. *Anthrozoos*, 21(2), pp. 109-121.
- Irvine L 2009, *Filling the ark: animal welfare in disasters*. Philadelphia, PA: Temple University Press.
- Shiley M 2006, *Dark Water Rising: Survival stories of Hurricane Katrina Animal Rescues*. Shidog Films, US.
- Thompson K 2013, *Save me, save my dog: Increasing natural disaster preparedness and survival by addressing human-animal relationships*. *Australian Journal of Communication*, 40(1), pp. 123-136.
- White S 2012, *Companion Animals, Natural Disasters and the Law: An Australian Perspective*. *Animals*, vol. 2(3), p. 380.
- Zottarelli LK 2010, *Broken Bond: An Exploration of Human Factors Associated with Companion Animal Loss During Hurricane Katrina*. *Sociology Forum*, vol. 25(1), pp. 110-22.

About the authors

Dr Melanie Taylor is an occupational psychologist working in risk perception and risk-related behaviour, with a focus on disasters and mass events of significance to national security, such as terrorism, pandemic, and emergency animal diseases.


Dr Penelope Burns is a general practitioner and a researcher working in disaster medicine with a particular interest in physical and mental health in the recovery.

Greg Eustace is an expert in emergency management and the psychosocial impacts of disasters with experience in animal management in emergencies.

Erin Lynch was a final year science student employed on a UWS scholarship to work on this project. Erin has experience of animal evacuation in cyclone shelters in the Cayman Islands and she is a WIRES volunteer.

Melanie, Penelope and Greg are currently involved in a Bushfire and Natural Hazards Cooperative Research Centre project 'Managing Animals in Disasters: Improving preparedness, response, and resilience through individual and organisational collaboration'.

Does emotional closeness to pets motivate their inclusion in bushfire survival plans? Implications for emergency communicators

Joshua Trigg, Dr Bradley Smith and Dr Kirrilly Thompson, Central Queensland University, Appleton Institute. 

ABSTRACT

As pet ownership influences responses to the threat of bushfire, current preparedness communication acknowledges the pet-owner relationship as a key reason for including pets in emergency plans. However, not all pet-owner relationships are the same. Some people are physically and emotionally 'closer' to their pets than are others, a difference that could impact survival plan intentions. This South Australian study examines how differences in pet-owner closeness affects owners' views of pets as a motivator for plan creation and of pet inclusion in planning across four survival-plan intention types: 'stay and defend', 'split the household', 'wait and decide', and 'leave early'. Of several pet-owner closeness indicators, family membership of pets and anticipated separation distress influenced whether pets were considered a motivator and were included in plans.

Intention-specific recommendations for creating motivating communications based on these effects are presented for emergency services communicators.

Introduction

Close relationships between people and their pets are an internationally acknowledged safety-risk factor with negative influences on owners' planning for and responding to environmental hazards including bushfire (Hall *et al.* 2004, Thompson 2013, Thompson *et al.* 2014). Currently, Australian emergency management practice reinforces that owners hold ultimate responsibility for pet welfare and safety during emergencies, including what they intend to do to protect pets as part of household planning (White 2012). In Australia, the model for facing bushfires, broadly separating planning intentions into 'prepare', 'go early', or 'stay and defend', incorporates the various characteristics known to influence risk perception

across people choosing each option (Mutch *et al.* 2010). Within these characteristics, many consider their pet's safety an influential element of bushfire survival planning, with post-bushfire research confirming that commitment to animals partly serves to justify the type of plan intention selected (Mackie, McLennan & Wright 2013, McLennan, Elliott & Beatson 2013, Trigg *et al.* 2014).

This influence is important to consider as 25 million pets are kept across 63 per cent of Australian households (AHAA 2013), many of which are susceptible to the increasing frequency and severity of fires driven by climate change (IPCC 2012). Moreover, the influence of pets extends to other forms of hazard such as flooding, where each additional pet increases the likelihood of evacuation failure by up to 30 per cent (Heath *et al.* 2001). Given the role that close pet-owner relationships play in planning intentions and ultimate outcomes, it presents a public health intervention point for emergency managers and communicators. As this closeness is uniquely characterised within each relationship (e.g. Blouin 2013), it can modify how different owners with different survival plan intentions perceive bushfire risk and planning.

Research supports that providing risk and preparedness information alone is insufficient to promote effective bushfire survival planning, given that household attitudes and beliefs modify intentions and preparedness outcomes (Paton *et al.* 2006). Pet owners are then likely to differ in their reasons for making survival preparations for pets. However, although 71 per cent of pet owners state that pets are included in their plans (Thompson, Brommer & Sherman-Morris 2012), and despite the risks, this issue still receives less focus than other household planning considerations. For emergency services communicators, this highlights a need to differentiate between types of pet-owner relationships when engaging owners, as differences in motivational concerns can influence their planning intentions. One such point of differentiation is the nature of pet-owner closeness as a motivator in plans.

Pet-owner closeness is frequently characterised as an emotional attachment akin to parental caregiving (Sable 1995, 2013), comprising ascription of family membership to pets (Walsh 2009), anthropomorphism

or animal personhood (Arluke 2010), as well as emotional support and seeing pets as a psychological safe haven for distress reduction (Keefer, Landau & Sullivan 2014). Under threatening conditions, anticipated loss of this relationship can provoke separation distress (Zilcha-Mano, Mikulincer & Shaver 2011) and motivate the risk of personal safety (Heath, Voeks & Glickman 2000). Thus, when a pet's safety is not assured owners are reluctant to leave without them (American Kennel Club 2006, Leonard & Scammon 2007). This emotional attachment—hereafter closeness—can be defined as having these five characteristics (Kurdek 2009). Closer pet-owner relationships are known to delay and reduce the odds of evacuation (see Brackenridge *et al.* 2012), and are associated with increased efforts to rescue pets and increased risk of personal harm (Heath, Voeks & Glickman 2000).

Presently there is a clear need to understand how these characteristics of closeness are linked to the original survival plan intentions of pet owners, as this likely determines how prepared they ultimately will be in the event of an emergency. Understanding this link assists emergency communicators in constructing motivating risk and preparedness messages for pet owners with the goal of improving community bushfire safety and pet welfare. This can be done by promoting pet inclusion in survival planning and reducing the logistical complications of pet-ownership when confronting a bushfire. The purpose of this study, therefore, was to examine pet owners' intentions to determine whether pet-owner closeness is useful in targeting motivations for including pets in survival planning across four bushfire survival-plan intentions: stay and defend (Defend); some leave, some stay (Split); wait and decide (Wait); and leave early (Leave). We argue that pet-owner closeness differs as a motivator at the level of these planning intentions.

Method

Background

This study was conducted as part of a larger project by the Bushfire and Natural Hazards Cooperative Research Centre and South Australia Country Fire Service (CFS) investigating perceptions and actions of South Australian communities directly and indirectly affected by three large bushfires in January 2014 (see Trigg *et al.* 2014). The research, conducted between April and June 2014, was promoted by the CFS and targeted residents in bushfire-affected areas of the Southern Flinders Ranges, Murray Lands, and Barossa Valley communities, but was also open to all residents of South Australia. Household owners were invited to complete an anonymous online survey by means of notices in public locations, and online promotion by the CFS.

Survey questionnaire

The survey instrument was completed online only, with all responses optional, and stated that findings would

be used to better understand household experiences of bushfire threat and safety. The 108 items for the larger study, taking approximately 45 minutes to complete, addressed perceptions, intentions, and actions regarding bushfire threat and survival planning, as well as how these related to pets and the pet-owner relationship. Pet-owner closeness items were based on past studies examining pet attachment (Kurdek 2009), family membership (Walsh 2009), and anthropomorphism (Arluke 2010). Following questions regarding owner and pet demographics, respondents indicated their level of agreement with five statements about the one pet they considered themselves closest to (rated 1, 'not at all', to 4, 'very much so'):

- Feel they are a member of the family (family membership)
- Feel that they are 'person-like' (anthropomorphism)
- Would keep them close-by when you are distressed (safe-haven)
- Would be distressed if separated from them (separation distress)
- Would risk your safety to protect them from harm (willing to risk safety).

Perceived risks of bushfire threat to family and pets were each rated as single items (1, didn't consider to 7, extreme), and the degree to which respondents felt prepared to face the recent fires from 1 (well prepared) to 4 (not prepared at all). Survival-planning items were based on previous bushfire taskforce research instruments (Mackie, McLennan & Wright 2013). These items (scored 'yes/no') covered:

- format of the plan ('no plan', 'written plan', or 'mental plan'), where a mental plan referred to a set of unwritten general intentions
- primary plan intention ('Defend', 'Split', 'Wait', or 'Leave')
- whether the plan made provisions for pets
- whether emergency supplies and safe routes were arranged for pets
- whether survival of pets was a key factor motivating plan development.

Results and discussion

Respondents

Out of the 606 respondents, 422 identified as pet owners (58 per cent female, 42 per cent male). The majority was employed (fully, 59 per cent; partly, 20 per cent), aged 35-44 (30 per cent) or 45-54 years (28 per cent), and included families with children aged 13-18 (26 per cent), 6-12 (26 per cent), 2-5 (13 per cent), and under two years (seven per cent). Bushfires affected the residential areas of 68 per cent of respondents and burned near 15 per cent of their properties. For nine per cent these reached or crossed the property boundary. Respondents kept pet dogs (77 per cent), cats (50 per cent), fish (16 per cent),

equines (13 per cent), non-poultry birds (16 per cent), chickens (31 per cent), ducks (six per cent), and uncommon species [e.g. reptiles].¹ Dog owners kept, on average, two dogs, and cat owners, two cats.

Bushfire risk and survival plan intentions

Plan type, intention, and pet inclusion

The majority of pet owners had a mental plan for bushfire survival (65 per cent), few had a written plan (19 per cent), and fewer had no plan or did not give a response (eight per cent each). For pet owners, the proportion of written plans is nearly double that of the general population, and for mental plans approximately 24 per cent higher (Trigg *et al.* 2014). Almost half of pet owners with a mental plan (44 per cent), and those with a written plan (49 per cent) indicated that survival of household animals was a key factor in their decision to create the plan.

For pet owners with a survival plan, both mental and written, the most commonly reported intention was to leave as an intact household (36 per cent), and the least was to passively shelter in place (one per cent). The latter was excluded from further analyses. Intention to defend (20 per cent), wait and decide (22 per cent), and to split the household (22 per cent) were comparably reported. This indicates that pet safety is a planning priority that does influence the likelihood of having a written or mental plan. The high frequency of mental plans also suggests that community engagement programs seeking to 'convert' mental to written plans might increase this likelihood. The caveat is made that although pets ranked highly as a planning consideration, less than half of those with plans indicated that pets were an important motive for planning. This reinforces the need to consider *if* pets act as a motivator for planning, and *how* they do so in preparedness communications.

Most owners with mental (78 per cent) and written plans (87 per cent) reported they had made provisions for pets. This was high across all intention types (>81 per cent). However, of those who had survival plans, 62 per cent had identified a safe destination and evacuation route and only half (53 per cent) had readied emergency supplies for household animals. Owners intending to leave more often had a safe route planned for pets (68 per cent) than did those intending to split (61 per cent), defend (59 per cent), or wait (52 per cent). Emergency supplies for animals were most often kept by those defending (59 per cent), leaving (50 per cent), or waiting (48 per cent), and less often by those intending to split (43 per cent). This suggests that some pet owners feel more prepared to manage pets during a bushfire than they may actually be. Particularly for those intending to defend or wait, many owners are neglecting two essential elements of household bushfire safety relevant to backup survival planning: safe evacuation routes and arranging emergency supplies for pets.

These requirements should be explicitly outlined for owners likely to choose these two intentions given the risks associated with insufficient evacuation planning for pets. To do this, prefaces to current guidelines for the care and transport of pets before, during, and after bushfire impact can be modified to stress that the same requirements are likely to take different forms depending on the chosen plan intention: changes in viable evacuation routes, pet relocation kit requirements.

Perceived risk to family and pets

Pet owners recalled feeling moderately at risk of bushfire threatening their family ($M = 3.82$, $SD = 1.58$) and pets ($M = 3.73$, $SD = 1.67$) on first moving to their area. Understandably, for those with properties directly threatened by bushfire, perceived risk to family ($M = 4.10$, $SD = 1.88$) and to pets ($M = 4.24$, $SD = 1.92$) was slightly increased. Importantly, for pet owners who felt threatened by bushfire, most felt 'adequately' though not 'well' prepared to face one ($M = 2.19$, $SD = 0.85$). From this we can see that perceived risk of bushfire threat to family and to pets is near equivalent both when under threat and when not, which further reinforces the notion that pets are considered family members.

Between plan intentions, perceived risk to family on first moving to the area was significantly lower for pet owners having no plan ($M = 3.00$, $SD = 1.28$) than in those intending to either defend ($M = 4.15$, $SD = 1.55$), split ($M = 3.90$, $SD = 1.68$), wait ($M = 3.86$, $SD = 1.56$), or to leave ($M = 3.80$, $SD = 1.57$), all $ps < .001$. Pet owners with no plan also reported significantly lower perceived risk to pets ($M = 2.88$, $SD = 1.39$) than those intending to defend ($M = 4.18$, $SD = 1.49$), split ($M = 3.63$, $SD = 1.85$), wait ($M = 3.84$, $SD = 1.61$), or to leave ($M = 3.65$, $SD = 1.70$), all $ps < .001$.² These contrasts in risk perception highlight the need to actively target pet owners who do not consider bushfire a potential risk factor for harm to their family and pets under non-threat conditions (i.e. non-fire season), particularly as these factors are associated with having no form of mental or written bushfire survival plan. Community engagement campaigns are one means of achieving this. Understanding the five pet-owner closeness characteristics can influence bushfire risk perception and motivation to include pets in survival planning.

Pet-owner closeness and risk perception

Five pet-owner closeness indicators were examined in relation to having a bushfire survival plan, including

2 Kruskal-Wallis differences were identified between intentions for both risk to family ($\chi^2_{(4, N=372)} = 18.305$, $p = .001$) and risk to pets ($\chi^2_{(4, N=370)} = 17.466$, $p = .002$). Those with no plan perceived lower bushfire risk to family than those intending to: Defend ($U_{(1100)} = 625.00$, $p < .001$), Split ($U_{(1071)} = 766.50$, $p < .001$), Wait ($U_{(106)} = 793.00$, $p = .001$), or Leave ($U_{(156)} = 1293.00$, $p < .001$). Those with no plan also perceived lower bushfire risk to pets than those intending to: Defend ($U_{(1100)} = 597.00$, $p < .001$), Split ($U_{(1051)} = 843.50$, $p = .005$), Wait ($U_{(1071)} = 791.00$, $p = .001$), or Leave ($U_{(155)} = 1421.50$, $p = .002$).

1 Poultry categories included those considered pets (< 20 birds).

pets in survival plans, and the primary plan-intention type chosen. These five indicators were ascription of family membership to pets, anthropomorphism, safe haven, separation distress, and willingness to risk personal safety for pet welfare. A global closeness score was also derived by summing the five scores (Cronbach's alpha = .88). For pet owners with a survival plan, correlations among the five closeness indicators showed that perceived risk to family increased alongside perceived risk to pets (Table 1). Risk to pets was also positively associated with considering a pet a family member, with turning to pets to alleviate distress, with anticipating distress if separated from the pet, and with willingness to take risks to protect pets.

Inspection of Table 1 suggests that owners who felt closer to their pets indicated they were highly likely to risk their safety to protect the animal from harm when facing a bushfire. Therefore, communicating the need for pet-preparedness in a manner that is sensitive to this link between pet-owner closeness and potential risk taking is recommended. To address this, communicators can promote explicit discussion of pets as a part of the family, that they may have 'honorary personhood', and that keeping them close by is a potential means of reducing distress during and after bushfires. The potential for experiencing separation distress might also be discussed given its relationship with increased risk-taking intentions, and the potential for later impacts in psychological wellbeing (Rujoiu & Rujoiu 2013). This will contribute to pet owner insights into these links and will inform choices between different plan intentions.

Pet-owner closeness and survival plan intentions

Pet owners with a survival plan did not differ significantly from those without one on any pet-owner closeness indicators (Mann-Whitney, $p > .160$). For pet owners with survival plans who incorporated pets, differences were identified across intention types for considering a pet a family member and degree of anticipated separation distress, though not for

anthropomorphism, safe haven, or willingness to risk personal safety for a pet.³ Differences in these two indicators of pet-owner closeness between intention types showed that the level of closeness was associated with the type of survival plan intention chosen.

Pets were significantly more strongly considered to be family members by owners intending to wait (M = 3.91) rather than to split the household (M = 3.55) (U(122) = 1496.00, $p = .001$). Stronger ascription of family membership to pets may also potentially be present in owners intending to wait rather than to defend, and in those intending to leave rather than to split the household, though in this study significance was not attained for these comparisons.

Owners were significantly more likely to feel they would be distressed if separated from a pet when they held the intention to leave (M = 3.43) rather than to split the household (M = 2.97) (U(169) = 2409.00, $p = .001$), and if they intended to wait (M = 3.54) rather than to split the household (M = 2.97) (U(122) = 1261.00, $p < .001$). This suggests that the degree of anticipated separation distress influences survival plan intention, although this would benefit from further predictive analysis.

Overall, the results indicate that pet owners are highly likely to consider pets as members of the family and to feel they would be very distressed if separated from them during a bushfire. This tentative conclusion suggests that the degree to which pets are seen as family members is associated with choosing survival plan options that keep pets within the family unit, rather than those that separate pets from family members. Furthermore, higher levels of anticipated separation distress are also associated with choosing survival plan intentions that keep the household unit intact.

3 Kruskal-Wallis tests for differences in pet-owner closeness across intention types were as follows: family membership ($\chi^2_{(3, N = 295)} = 13.521, p = .004$), anticipated separation distress ($\chi^2_{(3, N = 295)} = 16.391, p = .001$), anthropomorphism ($\chi^2_{(3, N = 295)} = 0.155, p = .984$), safe haven ($\chi^2_{(3, N = 295)} = 5.461, p = .141$), willingness to risk personal safety ($\chi^2_{(3, N = 295)} = 2.747, p = .432$). Bonferroni-corrected alpha was .004.

Table 1: Inter-correlations between pet-owner closeness indicators and perceived bushfire risk to pets and family upon moving to area.

	1	2	3	4	5	6	7	8
Family membership	-							
Anthropomorphism	.50**	-						
Safe haven	.62**	.50**	-					
Separation distress	.62**	.52**	.75**	-				
Willing to risk safety	.51**	.48**	.61**	.66**	-			
Global closeness	.66**	.79**	.81**	.85**	.82**	-		
Risk to pets	.19**	.11*	.23**	.20**	.17**	.20**	-	
Risk to family	.10	.07	.13*	.13*	.08	.13*	.83**	-

Note: Two-tailed Spearman's correlation used. * $p < .05$ ** $p < .01$.

Table 2: Family membership of pets and anticipated separation distress as predictors of pet-based motivation and pet inclusion in survival plans within plan intention types.

A. Protecting pets as key consideration in plan development (outcome)

Intention	Variable	B	SEB	Wald χ^2	OR	95 per cent CI	p
Defend	FM	-0.24	0.57	0.17	0.79	[0.26, 2.39]	.676
	SD	0.92	0.37	6.38	2.51	[1.23, 5.14]	.012
Split	FM	-0.01	0.35	0.01	0.99	[0.50, 1.97]	.978
	SD	0.61	0.34	3.24	1.84	[0.95, 3.57]	.072
Wait	FM	1.86	0.81	5.32	6.45	[1.32, 31.46]	.021
	SD	0.25	0.40	0.39	1.28	[0.59, 2.79]	.532
Leave	FM	0.22	0.42	0.26	1.24	[0.54, 2.85]	.613
	SD	1.33	0.31	18.50	3.77	[2.06, 6.91]	<.001

B. Bushfire survival plan makes provisions for pets (outcome)

Intention	Variable	B	SEB	Wald χ^2	OR	95 per cent CI	p
Defend	FM	-0.45	0.73	0.36	0.64	[0.15, 2.74]	.546
	SD	0.29	0.57	0.26	1.34	[0.44, 4.11]	.608
Split	FM	-0.41	0.40	1.05	0.66	[0.30, 1.46]	.305
	SD	-0.58	0.42	1.88	0.56	[0.25, 1.28]	.171
Wait	FM	-2.23	0.92	5.93	0.12	[0.02, 0.65]	.015
	SD	0.48	0.64	0.57	1.61	[0.46, 5.61]	.452
Leave	FM	-0.36	0.39	0.83	0.70	[0.33, 1.50]	.361
	SD	-1.11	0.39	8.06	0.33	[0.15, 0.71]	.005

Note: OR = odds ratio; CI = confidence interval; FM = family membership; SD=separation distress. Unadjusted odds ratios used.

Pet owner closeness as a motivator of pet inclusion

For each of the plan intentions, logistic regression was used to predict the likelihood that protecting one’s pets was a key consideration in plan development and that provisions were made for pets in the plan.⁴ These tests presented in Table 2, with all effect sizes moderately small ($R^2 = .18$ to $.36$), and summarised in Table 3 for discussion.

For pet owners intending to defend, viewing their pet as a family member had no influence on whether they considered the pet a motivator for planning, or whether their pet was actually included in their survival plan. However, for each one-point increase in separation distress, the odds that pets were a planning motivation were 2.51 times as high. It is feasible to suggest that risk and preparedness communications aimed at owners defending can more effectively position pets

as a motivator for creating a plan when emphasising potential for separation.

Conversely, using approaches that emphasise pet family membership and potential separation distress are unlikely to have any effect on pet-based motivation and plan inclusion in those intending to split. Despite this, anticipated separation distress approached significance for predicting increased odds of pets being a key plan consideration (1.84). These effects highlight that alternative tactics need examination within this group, particularly as family membership of pets is often used to frame this type of communication.

For pet owners intending to wait, for each one-point increase in family membership ascription, the odds that pets were a key consideration in planning were 6.45 times as high. However, the odds that pets were actually provided for in plans were 0.12 times as high (88 per cent decrease). This reciprocal effect is consistent with the earlier point that pet owners intending to wait are less prepared to manage pets during a bushfire than they feel, as pet-based motivation is not accompanied by actual pet-preparedness. Consequently, this group will likely benefit from communication tactics that focus on

⁴ Two sets of regressions were conducted: four for prediction of considering pets a key consideration in plan development; and four for prediction of actual pet inclusion in the plan. Predictor variables were ascription of family membership to pets, and anticipated separation distress. Good fit (Hosmer-Lemeshow, $ps > .05$) and model significance ($\alpha < .05$) were achieved for all but predicting pet inclusion by those intending to defend.

Table 3: Considerations for communicating pet preparedness needs based on ascription of family membership to pets and anticipated separation distress within each plan intention type.

Intention	Pet as Family Member (FM)		Anticipated Separation Distress (SD)	
	Pet as motivator	Pet in plan	Pet as motivator	Pet in plan
Defend	No effect	No effect	Higher SD predicts increased likelihood of seeing pet as a key plan motivator	No effect
Split	No effect	No effect	Higher SD predicts increased likelihood of seeing pet as a key plan motivator	No effect
Wait	Higher FM predicts increased likelihood of seeing pet as a key plan motivator	Higher FM predicts decreased likelihood of including pet in plan	No effect	No effect
Leave	No effect	No effect	Higher SD predicts increased likelihood of seeing pet as a key plan motivator	Higher SD predicts decreased likelihood of including pet in planning

alternative reasons for pet preparedness, for example, freeing up time and resources to prepare and protect other people and assets. This alternative focus aligns well with the lack of an effect of anticipated separation distress in those intending to wait.

Conversely, anticipated separation distress was a strong predictor for pet owners intending to leave. For each one-point increase in separation distress, the odds that pets were a key consideration in plan development were 3.77 times as high. However, this increase was also associated with a 67 per cent decrease in likelihood of including pets in survival planning (0.33). Those intending to leave early were more likely to consider their pet as a planning motivator as their anticipated separation distress increased, but were less likely to actually prepare their pets for a bushfire. For this group, pet family membership had no influence on regarding pets as a motivator or preparing them for bushfire.

Conclusion

This study offers new support for intention-based differences in pet-owner closeness: as a motivator of pet preparedness and as a concept that informs emergency services communication policy and practice. Although family membership of pets is used to frame pet bushfire preparedness communications (CFS and South Australian Metropolitan Fire Service 2012) it appears to operate more so on those intending to wait and decide. Potential for separation distress, however, also has important relevance to all pet owners except this group. Because of this, the tentative recommendations provided are given as a starting point for communicators to frame information about how pets should be included in household bushfire preparedness with the different reasons why pet

owners are motivated to do so. Reframing of existing communications may include new photographic representations of particular characteristics of pet-owner closeness most relevant to each intention group, such as minimising ‘pet family’ images, or finding alternatives, for owners intending to wait and see. This might also be achieved through modification of the introductory text in pet-preparedness guides to specifically address each intention group. For example, in the defend and split groups these might explicitly discuss the need to translate motivation from pets into behaviours that actually mitigate bushfire risk to them. Findings from this study are applicable to South Australian communities at some degree of bushfire risk. Lastly, research is needed to extend these recommendations to flood and other events, to other states and territories, as well as to other facets of human-animal relationships.

Acknowledgements

This research was undertaken within a project conducted by the Bushfire and Natural Hazards Cooperative Research Centre and the South Australian Country Fire Service. The views expressed here do not necessarily represent those of these organisations.

References

American Kennel Club 2006, *AKC survey finds majority of owners would defy emergency evacuation orders and stay with pets [press release]*, At: www.akc.org/pdfs/press_center/press_releases/2006/Hurricane_Survey.pdf [13 December 2014].

Animal Health Alliance Australia (AHAA) 2013, *Pet ownership in Australia: 2013, Ultimo, NSW*.

Arluke A 2010, *Our animals, ourselves, Contexts, vol. 9, no. 3, pp. 34-39*.

Blouin DD 2013, *Are dogs children, companions, or just animals? Understanding variations in people's orientations toward animals*, *Anthrozoos*, vol. 26, no. 2, pp. 279-294.

Brackenridge S, Zottarelli LK, Rider E & Carlsen-Landy B 2012, *Dimensions of the human-animal bond and evacuation decisions among pet owners during Hurricane Ike*, *Anthrozoos*, vol. 25, no. 2, pp. 229-238.

Hall MJ, Ng A, Ursano R, Holloway H, Fullerton C & Casper J 2004, *Psychological impact of the animal-human bond in disaster preparedness and response*, *Journal of Psychiatric Practice*, vol. 10, no. 6, pp. 368-374.

Heath SE, Kass PH, Beck AM & Glickman LT 2001, *Human and pet-related risk factors for household evacuation failure during a natural disaster*, *American Journal of Epidemiology*, vol. 153, no. 7, pp. 659-665.

Heath SE, Voeks SK & Glickman LT 2000, *A study of pet rescue in two disasters*, *International Journal of Mass Emergencies and Disasters*, vol. 18, no. 3, pp. 361-381.

Intergovernmental Panel on Climate Change (IPCC) 2012, *Managing the risks of extreme events and disasters to advance climate change adaptation, special report of the intergovernmental panel on climate change*, Cambridge University Press.

Keefer LA, Landau MJ & Sullivan D 2014, *Non-human support: Broadening the scope of attachment theory*, *Social and Personality Psychology Compass*, vol. 8, no. 9, pp. 524-535.

Kurdek LA 2009, *Pet dogs as attachment figures for adult owners*, *Journal of Family Psychology*, vol. 23, no. 4, pp. 439-446.

Leonard HA & Scammon DL 2007, *No pet left behind: Accommodating pets in emergency planning*, *Article, Journal of Public Policy & Marketing*, vol. 26, no. 1, pp. 49-53.

Mackie B, McLennan J & Wright L 2013, *Community understanding and awareness of bushfire safety: January 2013 bushfires*, *Bushfire Cooperative Research Centre*.

McLennan J, Elliott G & Beatson R 2013, *Householders' stated bushfire survival intentions under hypothetical threat: Factors associated with choosing to leave, or stay and defend, or wait and see*, *Bushfire Cooperative Research Centre*.

Mutch RW, Rogers MJ, Stephens SL & Gil, AM 2010, *Protecting lives and property in the wildland-urban interface: Communities in Montana and Southern California adopt Australian paradigm*, *Fire Technology*, vol. 47, no. 2, pp. 357-377.

Paton D, Kelly G, Burgelt PT & Doherty M 2006, *Preparing for bushfires: Understanding intentions*, *Disaster Prevention and Management*, vol. 15, no. 4, pp. 566-575.

Rujoiu O & Rujoiu V 2013, *Human-animal bond: Loss and grief. A review of the literature*, *Social Work Review*, vol. 12, no. 3, pp. 163-171.

Sable P 1995, *Pets, attachment, and well-being across the life cycle*, *Social Work*, vol. 40, no. 3, pp. 334-341.

Sable P 2013, *The pet connection: An attachment perspective*, *Clinical Social Work Journal*, vol. 41, no. 1, pp. 93-99.

South Australian Country Fire Service (CFS) & South Australian Metropolitan Fire Service 2012, *For their sake ... Know your bushfire risk... and make a plan for all your family*.

Thompson CN, Brommer DM & Sherman-Morris K 2012, *Pet ownership and the spatial and temporal dimensions of evacuation decisions*, *Southeastern Geographer*, vol. 52, no. 3, pp. 253-266.

Thompson K 2013, *Save me, save my dog: Increasing natural disaster preparedness and survival by addressing human-animal relationships*, *Australian Journal of Communication*, vol. 40, no. 1, pp. 123-136.

Thompson K, Every D, Rainbird S, Cornell V, Smith B & Trigg J 2014, *No pet or their person left behind: Increasing the disaster resilience of vulnerable groups through animal attachment, activities and networks*, *Animals*, vol. 4, no. 2, pp. 214-240.

Trigg J, Rainbird S, Thompson K & Bearman C 2014, *Capturing community experiences: South Australian bushfires January 2014*, *Bushfire and Natural Hazards Cooperative Research Centre: Manuscript under review*.

Walsh F 2009, *Human-animal bonds II: The role of pets in family systems and family therapy*, *Family Process*, vol. 48, no. 4, pp. 481-499.

White S 2012, *Companion animals, natural disasters and the law: An Australian perspective*, *Animals*, vol. 2, pp. 380-394.

Zilcha-Mano S, Mikulincer M & Shaver PR 2011, *An attachment perspective on human-pet relationships: Conceptualization and assessment of pet attachment orientations*, *Journal of Research in Personality*, vol. 45, no. 4, pp. 345-357.

About the authors


Joshua Trigg researches how human/companion-animal bonds motivate or inhibit emergency preparedness by animal guardians, including how practical and theoretical conceptualisations of human-animal relationships can inform emergency communications.

Dr Bradley Smith is a psychologist with expertise in the cognition and behaviour of canids, and the relationship between humans and animals. Bradley currently works as a lecturer in psychology and a senior post-doctoral research fellow focusing on the management of animals during natural disasters.

Dr Kirrilly Thompson is a cultural anthropologist researching the human-animal bond. She is currently leading a project that is reframing companion animals as motivators for disaster preparedness.

Bradley and Kirrilly are involved in a Bushfire and Natural Hazards Cooperative Research Centre project 'Managing Animals in Disasters: Improving preparedness, response, and resilience through individual and organisational collaboration'.

The challenges of managing animals and their owners in disasters: perspectives of Australian response organisations and stakeholders

Dr Melanie Taylor, Megan McCarthy, Dr Penelope Burns (University of Western Sydney), Dr Kirrilly Thompson, Dr Bradley Smith (CQUni Appleton Institute) and Greg Eustace (RSPCA Queensland). 

ABSTRACT

This paper documents the findings of a comprehensive national survey of Australian response organisations and other relevant stakeholders involved in the management of animals and their owners in emergencies and disasters. The aim of the study was to identify and prioritise the challenges encountered by these organisations in the management of animals and animal owners. In addition, attitudes towards organisational responsibility for the management of animals in emergencies and awareness of relevant emergency response and recovery arrangements were sought.

A sample of 98 respondents representing 68 organisations from all Australian states and territories were surveyed. The main challenges identified in the management of animals and their owners were in the logistics of animal management (personnel and equipment), the physical management and rescue of animals, interactions with owners during emergency response, and post-emergency impacts on the management of animals and their owners (distress and emotional issues). As would be expected, different categories of organisations and stakeholders experienced different challenges. Issues were reported across all categories irrespective of their formally-assigned roles and responsibilities in this area.

Introduction

There is a plethora of plans, guidelines, and legislation regarding animal welfare emergency management for companion animals, livestock and wildlife. Although the body of supporting academic literature is increasing in size and scope, Australian research remains relatively scant. Studies tend to be focused on North American

contexts, and are heavily framed around animal owners and their failure to evacuate, their risk-taking to save animals, and the emotional impacts of animal loss (Heath *et al.* 2001a, Heath, Voeks & Glickman 2001b, Zottarelli 2010, Lowe 2009, Hunt 2008). Hall *et al.* (2004) go beyond the owner perspective to acknowledge those who work with animals in emergency situations, such as veterinarians and government officials, may also suffer physical and psychological stress. The limited research that focuses on emergency management and response in the context of animals in emergencies and disasters is predominantly directed towards the logistics of planning for animals, information management needs, and justification of the need to include animals in emergency and disaster planning (Leonard & Scammon 2007, Edmonds & Cutter 2008, Austin 2013, White 2014).

Despite the lack of Australian empirical research in the area, there has been an increased awareness of the importance of plans and strategies that consider the needs of animals and their owners in emergency situations. In Australia, reports from the 2011 Queensland Flood Commission of Enquiry, the 2009 Victorian Bushfires Royal Commission, and the 2013 Tasmania Bushfires Enquiry have all included reference to the management of animals, and improvements required in response co-ordination, emergency management, and consideration of the human-animal bond. The *National Strategy for Disaster Resilience* (COAG 2011) has shaped the Australian approach taken in all aspects of emergency management and the strategy has promoted disaster resilient communities. Given the high rates of companion animal ownership in Australia (63 per cent) (Animal Health Alliance 2013) and the well-documented and profound impacts of pet and animal loss on owners (Zottarelli 2010, Hall *et al.* 2004, Thompson 2013), it would appear that a fundamental requirement of current emergency management should be the consideration of companion and commercial animals at all stages of emergency preparedness and planning.

With the recent endorsement of the *National Planning Principles for Animals in Disasters* by the Australia-New Zealand Emergency Management Committee there appears a willingness to work towards better integration of animal considerations into the emergency management planning and response

of relevant organisations, stakeholders and animal owners. Many people are potentially affected by these plans; however, there is little extant research that specifically focusses on the diverse range of response organisations and stakeholders involved in the management of animals and their owners in emergencies. There are challenges to the co-ordination of relevant public and private organisations during emergencies, including cultural, organisational, jurisdictional and legal barriers (Janssen *et al.* 2010). Indeed, as Irvine (2007) argues, animal stakeholders of all kinds 'have unique needs in disaster planning and response' (Irvine 2007). Therefore, there is a need for research that understands the distinctive operational, social, political, and economic factors in Australia that influence the varied stakeholders who encounter the human-animal interface in emergencies. This study begins to address this gap by exploring the challenges and notions of responsibility of various stakeholders including departments of primary industry, emergency services organisations, and local councils in Australia.

Understanding the experiences and attitudes of those involved with the management of animals during emergencies helps the development of best practice approaches to animal welfare emergency management that provides engagement with animal owners and other stakeholders in emergencies. This includes improving outcomes for public safety and the resilience of responders, animal owners, those with animal-related businesses, and communities. This study, along with a mirror study with frontline responders (Taylor *et al.* 2014) and studies with animal owner groups, was undertaken to aid the understanding of the breadth and the relative extent of the issues encountered, and the perspectives of a range of different response organisations and stakeholders operating in Australia.

Method

Survey design: An online survey was developed to explore a range of potential issues and challenges related to the management of animals and their owners in emergencies. The survey design and content were guided by prior research (Taylor *et al.* 2014). The survey was administered online via *SurveyMonkey*TM and data were collected over a six-week period, from mid-July to end-August 2014.

Sampling: A two-stage approach was used for sampling. A set of core response organisations was identified comprising all the state and territory fire agencies, State Emergency Services, police services, departments of primary industry, environment agencies, Australian Veterinary Association regions, RSPCA divisions, and relevant government agencies and Industry peak bodies (n=82). Invitations to take part in the study were sent to the Senior Director/Head of each organisation with a request to nominate someone from the organisation to complete the survey. In the second stage, a set of expert contacts from across animal health and welfare organisations, industry associations, local government, non-government

organisations (NGOs), and other stakeholder groups was identified (n=86) and invited to participate.

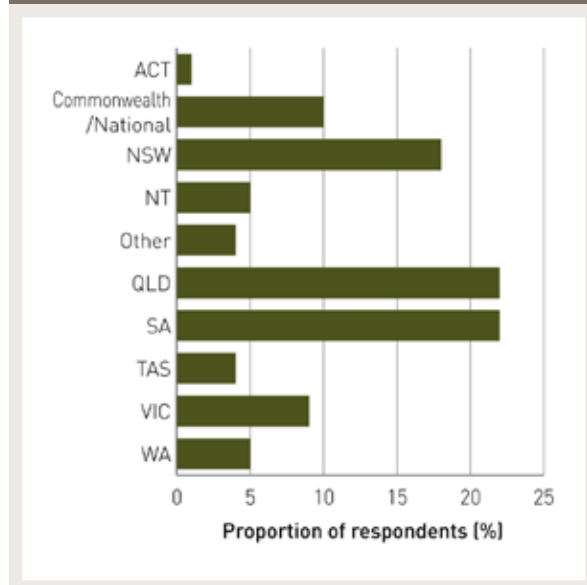
Analysis: Data from the survey were analysed using *IBM SPSS V.21*TM. Simple descriptive statistics are presented to provide an overview of the top-level data.

Results

Sample description

Data were collected from 98 respondents representing 68 organisations. The response rate from the core response sample was 66 per cent (54/82) and from the expert contact sample it was 51 per cent (44/86); the overall response rate for the survey was 56 per cent (94/168). Figure 1 summarises the jurisdictional distribution of the responses.

Figure 1: Jurisdictional distribution of respondents/responding organisations.



Respondents were asked to provide the name of their organisation. These organisations were categorised to aid analysis. Table 1 summarises these organisational categories.

As data in Table 1 show, the four largest organisational categories in the sample were emergency services organisations, primary industries, local government, and animal-related organisations. Respondents were asked to identify the oversight of their role within the organisation and most identified emergency management (68 per cent), operational response (67 per cent), animal management/animal welfare (64 per cent), and community engagement/disaster preparedness (60 per cent).

Table 1: Organisational category of sample.

Category	Organisation types/examples	N	%
Emergency services	Fire agencies, State Emergency Services, Police	25	25.5
Primary industries	State/Federal departments of primary industry	20	20.4
Local government	Councils	14	14.3
Animal-related organisations	Industry associations, animal welfare organisations, Australian Veterinary Association, wildlife care	21	21.4
RSPCA	State organisations	5	5.1
Other government agencies	Government agencies – Environment/Parks	8	8.2
Human welfare	NGOs, Human/Community services	3	3.1
Other	Independent/not included elsewhere	2	2.0

Operational responsibility for animal management and awareness of arrangements

In opening the survey participants were asked whether they felt their organisation should have responsibilities for the management of animals in emergency situations. Overall, 46 per cent felt that their organisation should have responsibilities, 41 per cent felt they shouldn't, and 13 per cent were unsure. Figure 2 summarises the responses by organisational category.

Although respondents from some organisational groupings clearly felt they should have responsibilities for the management of animals, such as primary industries and RSPCA, others, such as emergency services organisations did not (72 per cent 'no'). Interestingly, local government and other government agencies were least sure with a more even split in views across the three response options.

Respondents were asked whether they were aware of any formal animal emergency response and recovery arrangements in their state. Overall, two thirds (66 per cent) reported they were, 19 per cent reported that they weren't, and 14 per cent were unsure. Figure 3 summarises these data by organisational category.

Figure 3 shows the majority of respondents reported they were familiar with response and recovery arrangements, especially those in primary industries, however other groups were less certain or less aware. Many respondents provided comments in relation to this section of the survey. Mostly they outlined their organisation's role or position in the broader emergency context, or they identified the RSPCA as playing a major role, or they were focussed at the local level and were less certain of how their organisation's role was co-ordinated with that of others.

Problems or difficulties around the management of animals and their owners.

This section of the survey included questions about the general level of problems or difficulties encountered by respondents' organisations around the management of animals and their owners. A second question asked the extent to which a set of ten further, more specific, potential challenges were encountered. Table 2 summarises the overall extent of problems in this area across the whole sample and Figure 4 shows a numeric value assigned to each response option to simplify the data and provide a mean rating for each organisational category.

Table 2: Extent of difficulties faced around the management of animals and their owners.

In general, are there problems or difficulties for your organisation around the management of animals/ animal owners in disasters/ emergencies?	N	%
No, none at all	7	7.6
Some minor or rare issues	29	31.5
Occasional or recurring issues	39	42.4
Significant or frequent issues	13	14.1
Very serious or severe issues	4	4.3

Data in Figure 4 indicate that greater/more serious issues were reported by RSPCA representatives, followed by those from Primary Industries. Respondents from emergency services organisations reported the least issues.

Figure 5 presents mean rating data for ten specific challenges that might be encountered by response organisations and other stakeholders. These data are broken down to summarise the responses of the four largest organisational groups in the survey.

Figure 2: Do you think your organisation should have responsibilities for management of animals in disaster/emergency situations?

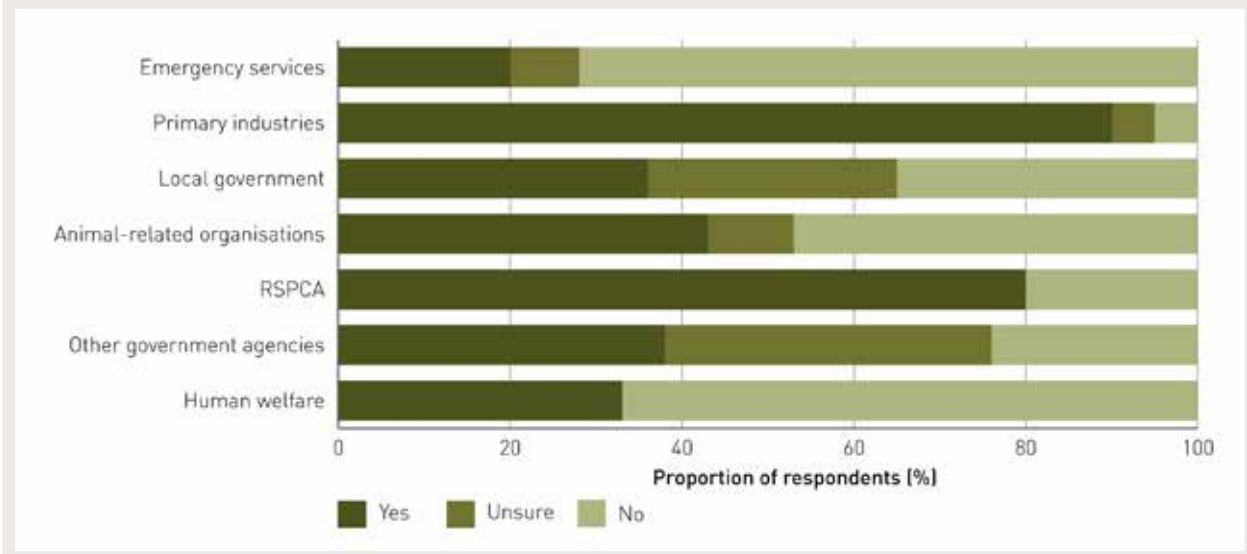


Figure 3: Are you aware of any formal animal emergency response and recovery arrangements within your State?

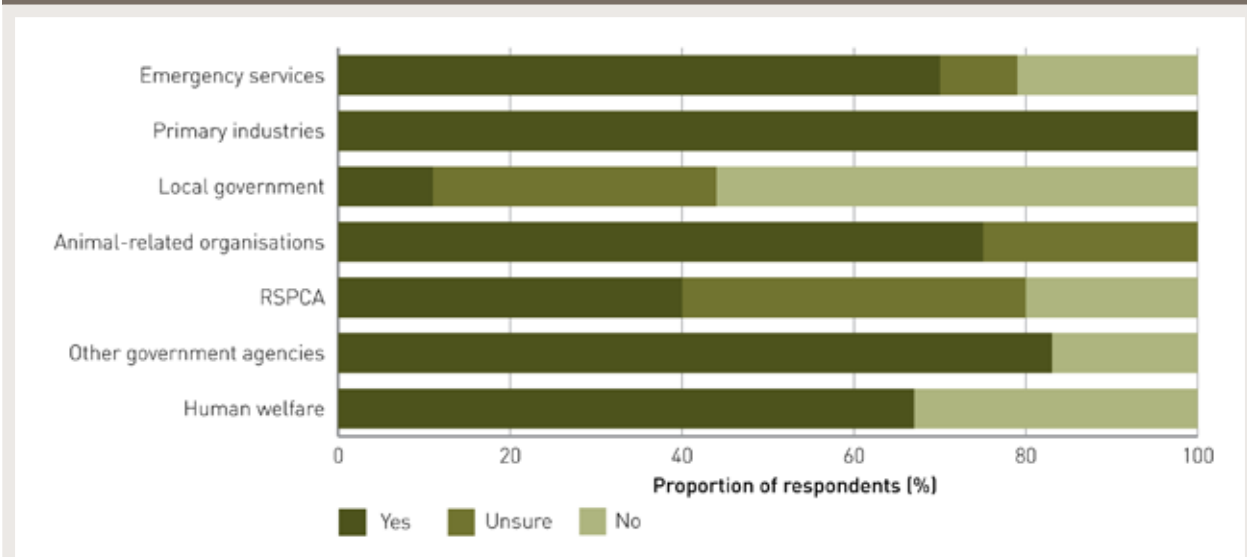


Figure 4: Mean ratings of general extent of problems or difficulties experienced in the management of animals and their owners. (1='No, none at all'; 5='very serious or severe issues').

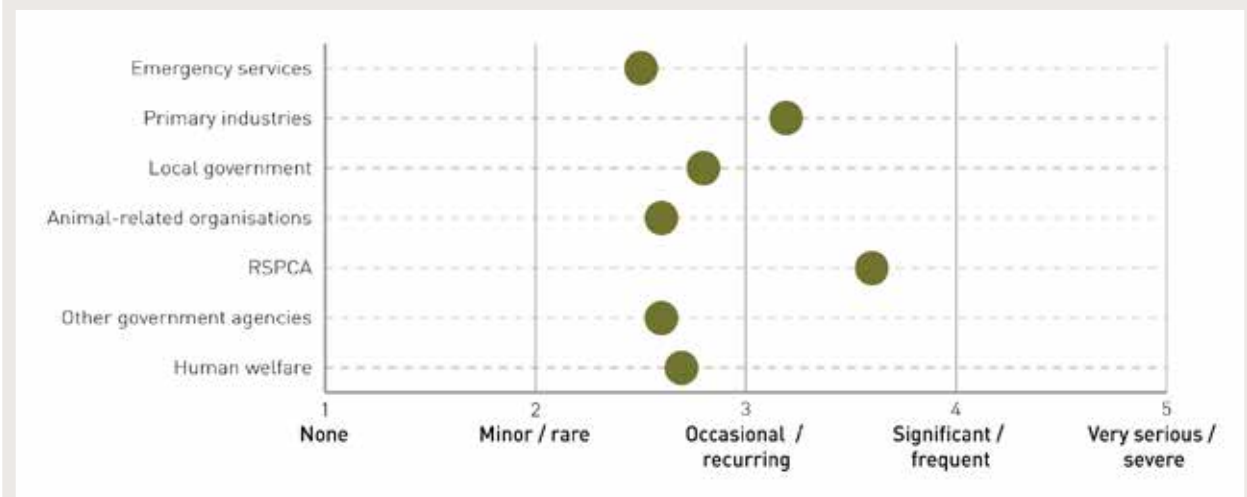


Figure 5: Mean ratings of problems or difficulties experienced in the management of animals and their owners, broken down by the four largest organisational groups in the sample. (1= 'No, none at all'; 5 = 'very serious or severe issues').

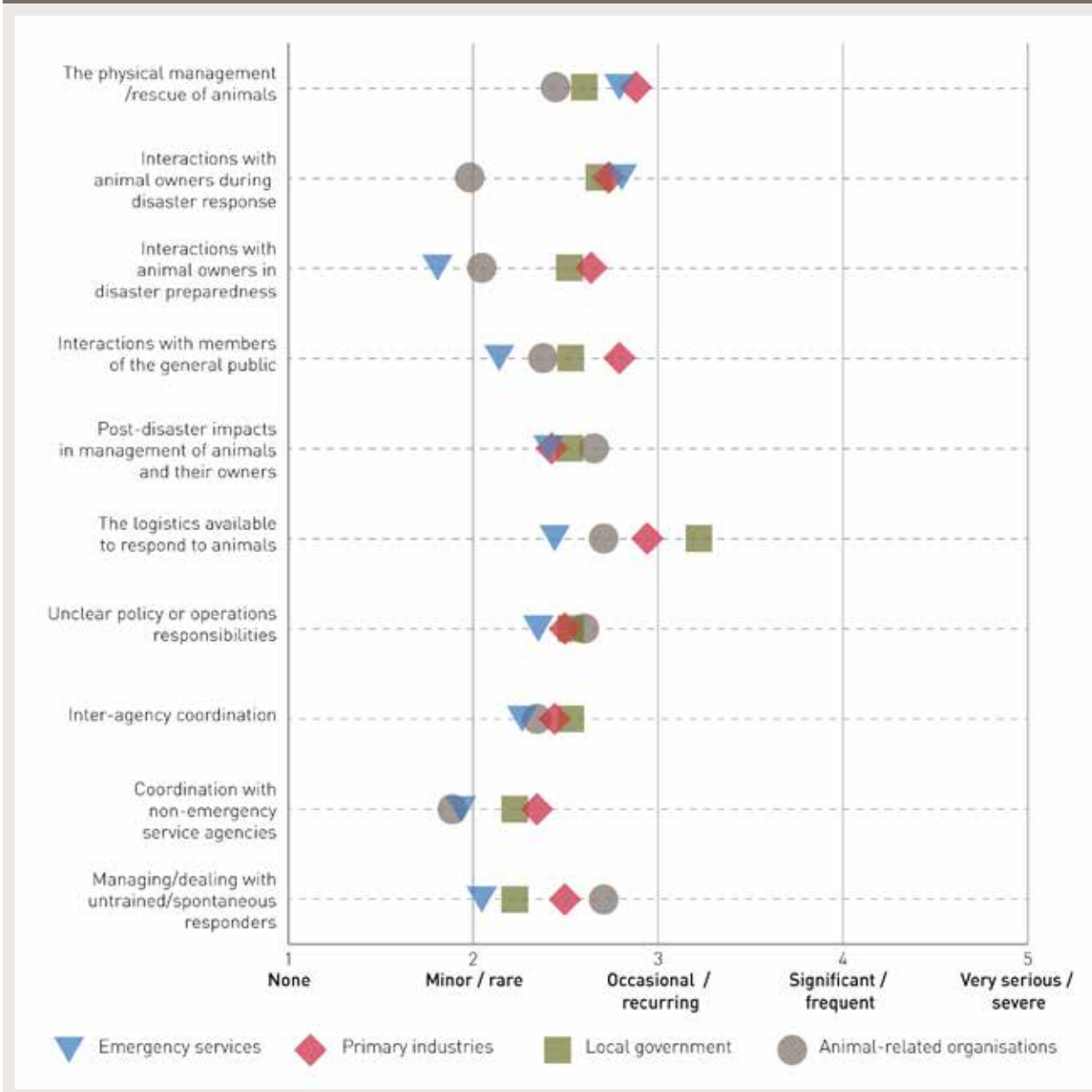


Figure 5 shows there was variability in the mean ratings across areas and between the organisational categories for each area. In many areas these differences were quite small and unlikely to be statistically significant. Logistics issues were a greater challenge for many organisations overall, and specifically for the primary industries and local government organisations. Emergency services organisations indicated that physical management of animals and interactions with animals and owners during response were greater issues. Physical management of animals and interactions with the general public were slightly greater challenges for Primary Industry organisations and local government, and managing untrained/spontaneous animal-related responders and post-emergency impacts appeared to be greater challenges for animal-related organisations.

Discussion

The data represents the views of a large number of response organisations and other stakeholders that have a level of involvement in the management of animals and their owners in emergencies.

In terms of organisational responsibility it is clear that primary industries organisations generally feel that this should be their responsibility and they report being aware of the relevant response and recovery arrangements. They are also a group likely to encounter greater challenges in this area, especially around the logistics of response (personnel and equipment) and interactions with members of the general public with regard to animals in emergencies. In most states and territories the Primary Industries

agency is the lead agency for animal welfare emergency management.

Emergency services organisations, however, generally feel they should not have this responsibility and report being less aware/more unsure of the relevant response and recovery arrangements. This finding is fairly unsurprising, given that the primary role of many of the agencies in this group is to manage the hazard/s and to protect human life. However, it is also clear that frontline responders from these organisations are most likely to be the ones on the scene during a response when issues with animals and owner management arise. The nature of the specific challenges reported by emergency services organisations reflects this, with issues around the interaction with owners during response and the physical management and rescue of animals being the ones reported as more frequent or serious.



Paracombe and Tea Tree Gully CFS volunteers lead dogs to safety during a fire in the Adelaide Hills, South Australia 2014.

The responses of local government stakeholders indicate that overall views on the level of responsibility in this area are mixed, and awareness of relevant arrangements is lower than for other groups. Furthermore, local government respondents reported a broader range of challenges in this area including inter-agency co-ordination, unclear policy/responsibilities, and post-emergency impacts, in addition to those already mentioned (e.g. logistics). The reasons for these results are unclear. Variability in the sample in terms of respondents' jurisdictions/locations and therefore their formal responsibilities in this area, or less familiarity with emergency arrangements *per se*, may help to explain this. It is highly likely, though, that local government organisations are more diverse as a group than the emergency services organisations

and primary industry groups in the sample, and are focussed at a local level with regard to emergency management. It is also true that in this study they were not sampled systematically in the way the other two groups were.

Animal-related organisations are another diverse group in the sample and their responses reflected a degree of variability, probably because some represent industry associations, some veterinary care, and others animal welfare. The challenges are varied also; more aligned to those of local government than to the other two larger organisational groups. In addition to the challenges already mentioned, animal-related organisations reported greater issues with untrained/spontaneous responders.

Due to lower representation of some groups in the study sample, less has been reported about those groups. The RSPCA responses stand out, in terms of their views on organisational responsibility and the extent of challenges faced in the context of emergencies. As a charity organisation the response and recovery role of the RSPCA is complex and the extent of its role in any given situation may depend on local or state government arrangements even though many other organisations, as well as the general public, identify the RSPCA as a focus for animal rescue and management at these times. The challenges for expectation management are evident, with the RSPCA often experiencing a mismatch in their role and other agency/individual perceptions regarding animal welfare emergency management.

In reflecting on the study, the views of a wide range of response organisations and other stakeholders were elicited providing useful and informative insights in this area, in an Australian context. Although the sample was extensive it should be kept in mind that each organisation has specific roles and responsibilities within its jurisdiction and, in addition, response, management and perceived roles may vary depending on the nature of the emergency and the type of animal being managed. As the survey sought to obtain a 'generalised' overview of this area it is likely that important local or specific issues may not be identified. Similarly, the survey was answered by only one person (occasionally two) in each organisation, albeit with the request to represent the views of the organisation more broadly. This approach has clear limitations and certain groups, such as local government, were represented in a limited/non-random way. Some caution should be taken in generalising these findings.

Conclusion

This is the first empirical identification of the challenges faced by a range of Australian response organisations and stakeholders when managing animals in emergencies. All organisations had a stake in managing animals in emergencies and all had experienced problems or difficulties. To minimise risk and confusion, avoid duplication, strengthen inter-agency collaboration and support frontline responders

and animal owners, the findings suggest there is a need for the sector to improve the clarification and communication of roles and responsibilities for managing animals during emergencies.

These study findings are being used to prioritise research as part of a project in the Bushfire and Natural Hazards CRC, and they will be used to guide discussions about the range of issues faced before, during, and after emergencies to help inform policy and training.

Acknowledgements

The authors would like to thank the organisations and individuals taking part in the study. The support of the Commonwealth of Australia through the Cooperative Research Centre program is acknowledged.

References

- Animal Health Alliance 2013, *Pet ownership in Australia*. At: <http://223.27.22.40/~sh10135/wp-content/uploads/2013/08/Pet-Ownership-in-Australia-2013-Summary-report-2013.pdf> [Accessed 28/11/2014].
- Austin JJ 2013, *Shelter from the storm: Companion animal emergency planning in nine states*. *Journal of Sociology and Social Welfare*, 40, 4, pp. 185-210.
- COAG 2011, *National Strategy for Disaster Resilience: Building Our Nation's Resilience to Disasters*, Council of Australian Governments, Canberra, Australia.
- Edmonds AS & Cutter SL 2008, *Planning for pet evacuations during disasters*. *Journal of Homeland Security and Emergency Management*, 5, p. 1.
- Hall MJ, Ng A, Ursano RJ, Holloway H, Fullerton C, & Casper J 2004, *Psychological Impact of the Animal-Human Bond in Disaster Preparedness and Response*. *Journal of Psychiatric Practice*, 10 (6), pp. 368-374.
- Heath SE, Kass PH, Beck AM & Glickman LT 2001, *Human and Pet-related Risk Factors for Household Evacuation Failure During a Natural Disaster*. *American Journal of Epidemiology*, 153, pp. 659-665.
- Heath SE, Voeks SK & Glickman LT 2001, *Epidemiologic features of pet evacuation failure in a rapid-onset disaster*. *Journal of the American Veterinary Medical Association*, 218, pp. 1898-1904.
- Hunt M, Al-Awadi H & Johnson M 2008, *Psychological Sequelae of Pet Loss Following Hurricane Katrina*. *Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals*, 21(2), pp. 109-121. doi: 10.2752/175303708X305765.
- Irvine L 2007, *Ready or Not: Evacuating an Animal Shelter During a Mock Emergency*. *Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals*, 20(4), pp. 355-364. doi: 10.2752/089279307x245482.
- Janssen M, JinKyu L, Bharosa N & Cresswell A 2010, *Advances in multi-agency disaster management: Key elements in disaster research*. *Information Systems Frontiers*, 12(1), pp. 1-7. doi: 10.1007/s10796-009-9176-x.
- Leonard HA & Scammon DL 2007, *No Pet Left Behind: Accommodating Pets in Emergency Planning*. *Journal of Public Policy and Marketing*. 26, pp. 49-53.
- Lowe S, Rhodes J, Zwiebach L & Chan C 2009, *The Impact of Pet Loss on the Perceived Social Support and Psychological Distress of Hurricane Survivors*. *Journal of Traumatic Stress*, 22(3), pp. 244-247.
- Taylor M, Eustace G, Smith B, Thompson K, Westcott R & Burns P 2014, *Managing Animals in Disasters (MAiD): The experiences of emergency services personnel in supporting animals and their owners in disasters*. *Proceedings of the Bushfire and Natural Hazards Cooperative Research Centre Research Forum*, Wellington, NZ. At: www.bnhcrc.com.au/publications/biblio/bnh-1562.
- Thompson K 2013, *Save me, save my dog: Increasing natural disaster preparedness and survival by addressing human-animal relationships*. *Australian Journal of Communication*, 40, pp. 123-136.
- White JI 2014, *Supporting the Information Management Needs of People Helping Animals in Disasters*. Paper presented at the *Proceedings of the 18th International Conference on Supporting Group Work*, Sanibel Island, Florida, USA.
- Zottarelli LK 2010, *Broken Bond: An Exploration of Human Factors Associated with Companion Animal Loss During Hurricane Katrina*. *Sociology Forum*, 25, pp. 110-122.

About the authors

Dr Melanie Taylor is an occupational psychologist working in risk perception and risk-related behaviour.

Megan McCarthy is an anthropologist with experience working in the area of animals in disasters in Thailand.

Dr Penelope Burns is a General Practitioner and a researcher working in disaster medicine with a particular interest in physical and mental health in the recovery.


Dr Kirrilly Thompson is a cultural anthropologist with interests in human-animal relations and risk.

Bradley Smith is a psychologist and a researcher with expertise in the cognition and behaviour of canids, and the relationship between humans and animals.

Greg Eustace is a practitioner in emergency management and the psychosocial impacts of disasters with experience in animal management in emergencies.

Authors are involved in the Bushfire and Natural Hazards Cooperative Research Centre project 'Managing Animals in Disasters: improving preparedness, response, and resilience through individual and organisational collaboration'.

Risk perception, preparedness and response of livestock producers to bushfires: a South Australian case study

Dr Bradley Smith, CQUniversity, Appleton Institute, Dr Melanie Taylor, University of Western Sydney, and Dr Kirrilly Thompson, CQUniversity, Appleton Institute. 

ABSTRACT

Animal ownership has been shown to be a risk factor for the survival of humans during emergencies and natural disasters largely due to evacuation failures. For livestock producers, it is often impossible to evacuate their animals given the need to ensure the safety of all persons, property (e.g. dwellings, equipment, paddocks), pets, and the welfare of their stock. To determine their use of information and warnings, and their planning and preparedness behaviour, 41 livestock producers from three field sites around rural South Australia that were threatened or impacted by significant bushfires in January 2014 were interviewed. The majority had a low level of concern for bushfire threat, with almost all opting to 'stay and defend' their property. Few had formally written 'bushfire risk management plans', adequate insurance for livestock, a contingency plan, or used information resources. However, they reported multiple other routine and ordinary practices contributing to their bushfire preparedness. Such activities used a more 'common sense' approach, conducted as part of everyday property management practices and farming culture. It is clear that livestock producers have different needs before and during bushfires, and have a different perception of risk than other animal owners or rural dwellers in general.

Introduction

Bushfires are a constant feature of the Australian landscape, posing significant threat to the environment, public and private infrastructure and human and animal lives (Gentle, Kierce & Nitz 2001, Johnston 2009, Liu, Stanturf & Goodrick 2010). For livestock producers, the threat and consequences are devastating (Berry

et al. 2011, Millar & Roots 2012). The shift to larger grazing areas and assets distributed over wider areas, and the diminishing population and fire-fighting capacity in regional areas further increases the vulnerability of livestock producers and their animals (Irvine 2009, Millar & Roots 2012, Whittaker, Handmer & Mercer 2012).

Animal ownership has been identified as a risk factor for the survival of humans during emergencies and natural disasters, largely through evacuation failure (Heath *et al.* 2001, Irvine 2009, Thompson 2013). Livestock producers or farmers however, represent a unique population of animal owners in that it is often impossible to evacuate their animals. They also have a responsibility to ensure the safety and welfare of all persons, property (e.g. dwelling, fences, paddocks, equipment), pets and livestock (Coll 2013a, Hall *et al.* 2004, Wilkie 2005). There are both ethical (i.e. to ensure the welfare of animals), and financial drivers for producers to reduce the potential impacts of disasters on their stock. They have invested significant time and resources in the health and growth of their animals, and the full economic potential of their animals cannot be realised until sale (Coll 2013a). Replacing lost animals can restore outputs lost to individual producers, but the output lost to the economy is far reaching (Berry *et al.* 2011, Gentle, Kierce & Nitz 2001). Between 1967 and 2011 in Australia, it is estimated that 1.6 million livestock were lost due to natural disasters or emergencies (Coll 2013b). The direct economic cost of livestock losses from the 2009 Black Saturday fires alone is estimated at more than \$18 million (Coll 2013a, 2013b).

There is increasing recognition of the importance of integrating livestock into disaster planning (for examples, see *National Planning Principles for Animals in Disasters* developed by the Australian Animal Welfare Strategy¹, and the *International Livestock Emergency Guidelines and Standards* (Watson 2011)). Such strategies can reduce losses to livestock and the economy. In turn, reducing livestock and economic loss contributes to human health and wellbeing of individuals and farming communities (Coll 2013b, Hall *et al.* 2004, Hunt *et al.* 2010, Zottarelli 2010). It also has

¹ Australian Animal Welfare Strategy.
At: www.australiananimalwelfare.com.au.

the potential to save human life, as people often risk their lives to rescue their animals (Coates 1999, Heath *et al.* 2001, Hunt *et al.* 2012, Irvine 2009).

It is important for livestock producers to prepare for emergency events. However landholders and farmers are often underprepared. For example, Eriksen, Gill and Head (2010) found that despite most landowners in rural southeast Australia perceiving a high bushfire threat, fewer than one in two (43 per cent) had prepared a bushfire action plan, and those who did, had not written it down or discussed it with family members. Whittaker, Handmer and Mercer (2012) also noted that while many livestock producers were insured for their home and property, many were either not insured at all, or underinsured for livestock, fencing and machinery.

While the preparation behaviour of Australians in rural areas has been considered in general (Eriksen & Gill 2010, Whittaker, Handmer & Mercer 2012), this paper presents the first attempt to single out livestock producers in Australia as a group requiring particular attention. In order to increase the preparedness of livestock producers, it is important to understand their levels of preparedness and determine any differences from rural dwellers in general. Such insight is provided by interviews with 41 livestock producers from three field sites around rural South Australia who were threatened by significant bushfires in January 2014.

Methods

Description of fires

In January 2014 multiple bushfires affected South Australia. Three of the largest fires originated in Eden Valley in the Barossa Valley (Jan 17 – Jan 20), Bangor in the Southern Flinders Ranges (Jan 14 – Feb 14), and Rockleigh to the north behind the Adelaide Hills (the Murraylands, Jan 14 – Jan 17). See Rogers (AGD 2015) for locations of each fire. All were particularly demanding of Country Fire Service resources and caused extensive damage to land and some structures (total of 64 5000 hectares burnt, 11 houses destroyed, and 4 840 sheep and 80 cattle lost (Rogers in AGD 2015).

Procedure

The South Australian Country Fire Service (CFS) and the Bushfire and Natural Hazards Cooperative Research Centre assembled a community taskforce with the aim of measuring the community perspective at each of the three fire sites. Interviews were conducted in Eden Valley, Bangor, and Rockleigh during April and May 2014. The data used in this research was collected through semi-structured face-to-face interviews ($n = 41$). Research teams consisted of an experienced researcher and a CFS community engagement officer (in uniform and marked vehicle). Participants were interviewed on their properties, either at their house or a nearby part of the property. For full research methodology, including the interview questions, see Trigg *et al.* (2014).

Participants

Of the 171 interviews conducted (five households declined to participate), 41 households (Bangor $n = 18$, Eden Valley $n = 14$, Rockleigh $n = 9$) were identified as being a livestock producer (sheep and cattle). Only full-time producers with at least 200 sheep or 20 cattle were included in the sample. Gender of participants was evenly split (49 per cent male, 39 per cent female, 12 per cent multiple interviewees). The mean age of the sample was 57.46 years of age (± 13.86). Most (81 per cent) owned pets as well as livestock. A high proportion (82 per cent) had experience with bushfires in the past. Just over half (54 per cent) had never been a member of the local volunteer fire service (CFS), 26 per cent were current members, and 21 per cent had previously been a member. One quarter (27 per cent) reported having participated in community bushfire safety activities.

Property

Most livestock producers lived on a farm or agriculture business (93 per cent), with the remainder residing in a residential block or large lifestyle block (i.e. lived in town and kept livestock on property nearby). The size of the properties ranged from 247 acres to 4 500. The number of years residing at the bushfire-affected address included 22 per cent less than ten years, 34 per cent between 11–30 years, 20 per cent between 31– 50 years, and 24 per cent over 50 years).

Results

Concern for bushfire

Prior to the January bushfires, over half (68 per cent) of livestock producers believed their home or family was at risk of bushfire threat. When asked to rate their level of concern about bushfires in the past on a Likert scale from 1 = 'not at all' to 5 = 'extremely', the mean response was 2.75 (± 1.25 S.D). The level of concern about bushfires during the January bushfires did not change drastically, with the mean response = 3.0 (± 1.30 S.D). See Table 1.

Table 1: Level of concern regarding the threat of bushfire prior to, and during the 2014 January bushfires.

Relative to Jan 2014	Level of concern				
	1 Not at all	2	3	4	5 Extremely
Prior to 2014 fires	23%	18%	30%	23%	8%
During 2014 fires	15%	23%	25%	23%	15%

Bushfire plans

Three quarters of the livestock producers had some form of action plan (the rest had no plan at all). While 70 per cent had a 'mental' bushfire action plan, only five per cent of livestock producers had a written plan. Most householders had discussed the plan (65 per cent), 14 per cent had practised the plan, 56 per cent included pets in the plan, and 34 per cent included a backup plan. One quarter used CFS materials to develop their plan (26 per cent), including the CFS 'Bushfire Survival Plan' template (18 per cent), the 'Guide to Bushfire Safety' brochure (32 per cent), the CFS website (11 per cent) or CFS App (six per cent) to develop plans.

The highest cited bushfire action plan prior to the bushfire was to 'stay and defend', and was the most prevalent behaviour during the bushfire, with 73 per cent of householders ultimately choosing at least one member to 'stay and defend'. A quarter initially planned for some members of the household to leave early and others to stay and defend, however the number of householders who opted for this course of action doubled. Table 2 outlines the action plans prior to, upon hearing about the fire, and what the householders eventually chose to do.

Table 2: Bushfire action plans prior to, upon hearing (initially) and what actually happened (ultimately) in response to the bushfires.

Bushfire plan	Prior	Initially	Ultimately
Everyone stay and defend	39%	44%	43%
Wait and see how bad it is before deciding	8%	12%	14%
Some people leave early, other stay and defend	15%	17%	30%
Whole household leaves	18%	2%	14%
No concrete plan	21%	12%	-

Specific bushfire preparations

During the interview, specific bushfire preparations conducted before the January fires were noted (that is, participants were not prompted for specific actions). Of note, 66 per cent had a water supply independent of mains, 66 per cent had cleared space around the house and clear gutters, 34 per cent had identified a safe destination and evacuation route, 32 per cent had talked about bushfire risk with neighbours, 24 per cent had protective clothing, 29 per cent had a power supply independent of mains, 27 per cent had identified safe destination and evacuation routes for pets and livestock, 15 per cent had a bushfire sprinkler system, 12 per cent had an emergency kit ready, seven per cent had the CFS FireApp on their mobile phone or tablet, and seven per cent had supplies ready for pets and livestock.

During the bushfire

The majority of livestock producers first became aware of the fire (unprompted responses) by witnessing smoke (68 per cent), receiving a call from neighbours or a friend (51 per cent), seeing flames (37 per cent), hearing it on the radio (22 per cent), finding out through emergency alert on the landline telephone (17 per cent), and from the CFS website (17 per cent). When first hearing of the bushfire in the area (unprompted responses), 37 per cent relocated pets and livestock, 27 per cent arranged for the safety of pets and livestock, and 15 per cent collected valuables to take to safety. For those who decided to leave, the triggers to decide to leave included seeing flames (15 per cent), phone information from family/friends/neighbour (12 per cent), seeing smoke (10 per cent), face-to-face information/advice from neighbours (nine per cent), and, lastly, emergency alert message (seven per cent).

Fire damage

The majority (81 per cent) of properties were directly impacted by the fire (i.e. located within or near the 'fire scar'), with 19 per cent residing outside of the scar. According to householder assessments, while 15 per cent suffered no damage or loss, the fire threatened but did not damage 20 per cent of properties, 39 per cent sustained minor damage, 23 per cent sustained major damage, and three per cent lost their primary residence. Two thirds (66 per cent) reported other aspects of their operation were impacted or destroyed, including paddocks, fencing, piping, stock feed (e.g. hay bales), tractors, sheds, and equipment. One third (37 per cent) of producers interviewed lost pets or livestock, with losses ranging from 14 to 520 animals. Some producers lost stock indirectly due to the fire, for example, forced to sell healthy animals due to lack of feed.

Insurance

The majority of interviewees had appropriate insurance cover for their house (84 per cent), contents (83 per cent), and machinery/equipment (68 per cent). However, as shown in Table 3, only half (55 per cent) had cover for livestock, pets, other animals, with the other half being inadequately insured (six per cent) or having no insurance at all (39 per cent). Often fencing was not covered in insurance.

Table 3: Type and level of insurance covering bushfire damage.

Type of cover	Level of insurance		
	Fully covered	Under insured	No insurance
House	84%	8%	8%
Contents	83%	10%	8%
Machinery/equipment	68%	18%	13%
Livestock, pets, other animals	55%	6%	39%

Future plans

When livestock producers were asked if they had changed their bushfire plan as a result of the January fires, 80 per cent reported that they had not ultimately changed their plan (e.g. to stay and defend, or leave), however over half (56 per cent) stated that they had altered their original plan. Things they reported changing included the use of alternative (fire proof) fencing material, digging pipes deeper, grazing around the house more, keeping house clear of trees and bushes, insuring livestock, staying away longer until the fire is completely cleared, upgrading communication devices, and purchasing more sprinklers and firefighting units. Asked if there was additional information they wished they had, 51 per cent indicated 'yes', mostly concerning accurate, detailed and timely information and warnings in relation to the fire.

Discussion

The majority of livestock producers chose to 'stay and defend' their property. This bushfire plan is likely to reflect their financial and emotional investment in their residence, property, and animals. Livestock producers are often highly active in the defence of their own and neighbouring properties, typically by fighting fires with small farm fire units. Given extensive social networks of livestock producers, and their shared sense of identity and solidarity (Whittaker, Handmer & Mercer 2012), there was little reliance on information outside of the property and local community for either developing plans, or seeking information during disasters.

Similar to the South Australian community interviewed as part of the larger study (Trigg *et al.* 2014), few had formally written 'bushfire risk management plans', or planned for contingencies. Perhaps a point of difference to the general community however, is that the livestock producers appeared to incorporate bushfire preparation into their routine practices of property management. Such activities used a more 'common sense' approach developed over time and with experience, and were implemented as part of the day-to-day management of the property. This included property maintenance (e.g. creating fire breaks, maintaining low 'fuel' load around house), infrastructure (e.g. mobile fire units, tanks, pumps), and providing 'safe' paddocks for livestock (e.g. minimising areas of dry grass, timber or other fuel). To some, these activities may not be distinguished from everyday farming practice as part of bushfire planning and preparation, but part of routine farming activity and culture (Whittaker, Handmer & Mercer 2012). In general, livestock producers are used to dealing with risk, hazard and uncertainty (e.g. drought, stock yields, disease, predators) and are usually highly self sufficient and equipped to defend their properties.

Undertaking routine preparatory activities in combination with their extensive knowledge and awareness of the land and local fire behaviour may

lead livestock producers to believe they are well prepared, i.e. self efficacy (people's belief in their ability to influence events that affect their lives, Bandura 1977). The high self-efficacy to defend against bushfire reported by some livestock producers might be a direct result of comprehensive mitigation strategies in response to feelings of vulnerability and threat to bushfire. However, for some, this may lead to an unrealistic evaluation of risk, and place some livestock producers in high-risk situations for which they are not adequately prepared. For example, assessment and movement of livestock should be implemented well in advance of a fire front passing through the property. Yet, due to the unpredictable nature of fire, this is not possible until the last minute, leaving little opportunity for the producer to find safety if conditions change.

As reported by Whittaker, Handmer and Mercer (2012), few livestock producers had adequate insurance cover for their livestock. It is uncertain whether this reflects an underestimation of the risks of natural disasters and/or the value of livestock-oriented preparation activities in the face of competing demands for their time and energy (Coll 2013b). Alternatively, insurance premiums may simply be cost prohibitive, and/or producers may be prioritising expenditure in difficult times on necessities such as animal feed during drought (Whittaker, Handmer & Mercer 2012).

Knowledge of the characteristics of how livestock producers perceive risk and prepare and act during bushfires (e.g. no formal plans, low level of concern, high self efficacy and complacency, under utilisation of warnings and information, resistant to change) present several challenges to firefighting agencies in managing landholders and livestock producers. Agencies need to work collaboratively with landholders to develop management strategies, and be aware that in some cases there is likely to be resistance to change or advice from sources outside of the community. There is a need for education programs that support decision-making in terms of weighing up the costs of time and money against the potential loss as a result of inaction (Coll 2013b). It may also be useful to encourage flexible contingency plans (i.e. Plan B, C and D), community champions (respected community members promoting bushfire planning), and engage pre-existing networks in the recovery phase (e.g. vet care, land sharing, fodder donations, community/neighbour debrief, Thompson *et al.* 2014).

Community-wide bushfire preparation can be enhanced through knowledge transfer via social networks and mentoring (Anikeeva, Steenkamp & Arbon 2015, Stelling *et al.* 2011). This is particularly important given increasing peri-urban development, boutique property holdings and first generation land ownership in the face of traditionally closed farming communities. Given that the loss of livestock is also of national economic significance (Coll 2013a, b), encouraging the development of an emergency plan by offering financial assistance or subsidising insurance to those with a registered plan may be worthwhile.

The particular attitudes, values, risk perceptions, bushfire assumptions, insurance decisions, mitigation behaviours etc. that underpin the objectively measured bushfire preparedness (i.e. planning and insurance) of livestock producers are far from trivial. They need to be identified and addressed to ensure the effective translation of existing policy and guidelines, and to facilitate the development of successful communication and engagement initiatives. Further qualitative research could provide the insight required to understand the full significance of findings reported in this paper.

References

- Anikeeva O, Steenkamp M & Arbon P 2015, *The future of social media use during emergencies in Australia: insights from the 2014 Australian and New Zealand Emergency Management Conference social media workshop*, *Australian Journal of Emergency Management*, vol. 30, no. 1, pp. 22–26.
- Bandura A 1977, *Self-efficacy: toward a unifying theory of behavioural change*, *Psychological Review*, vol. 84, no. 2, pp. 191–215.
- Berry H, Hogan A, Owen J, Rickwood D & Frager L 2011, *Climate change and farmers mental health: risks and responses*, *Asia-Pacific Journal of Public Health*, vol. 23, no. 2, suppl., pp. 119–132.
- Coates L 1999, *Flood fatalities in Australia, 1788–1996*, *Australian Geographer*, vol. 30, no. 3, pp. 391–408.
- Coll E 2013a, *Quantification of Production Losses Due to Livestock Deaths from Disasters in New Zealand*, *Journal of Commonwealth Veterinary Association*, vol. 29, no. 2, pp. 13–18.
- Coll E 2013b, *The case for preparedness: quantification of production losses due to livestock deaths from disasters in Australia*, *World Society for the Protection of Animals*.
- Eriksen C & Gill N 2010, *Bushfire and everyday life: examining the awareness-action gap in changing rural landscapes*, *Geoforum*, vol. 41, no. 5, pp. 814–825.
- Gentle N, Kierce S & Nitz A 2001, *Economic costs of natural disasters in Australia*, *Australian Journal of Emergency Management*, vol. 16, no. 2, pp. 38–43.
- Hall M, Ng A, Ursano R, Holloway H, Fullerton C & Casper J 2004, *Psychological impact of the animal-human bond in disaster preparedness and response*, *Journal of Psychiatric Practice*, vol. 10, no. 6, pp. 368–374.
- Heath S, Kass P, Beck A & Glickman L 2001, *Human and pet-related risk factors for household evacuation failure during a natural disaster*, *American Journal of Epidemiology*, vol. 153, no. 7, pp. 659–665.
- Hunt M, Al-Awadi H & Johnson M 2008, *Psychological sequelae of pet loss following Hurricane Katrina*, *Anthrozoos*, vol. 21, no. 2, pp. 109–121.
- Hunt M, Bogue K & Rohrbaugh N 2012, *Pet ownership and evacuation prior to Hurricane Irene*, *Animals*, vol. 2, no. 4, pp. 529–539.
- Irvine L 2009, *Filling the ark: animal welfare in disasters*, Temple University Press, Philadelphia, PA.
- Johnston F 2009, *Bushfires and human health in a changing environment*, *Australian Family Physician*, vol. 38, no. 9, pp. 720–724.
- Liu Y, Stanturf J & Goodrick S 2010, *Trends in global wildfire potential in a changing climate*, *Forest Ecology and Management*, vol. 259, no. 4, pp. 685–697.
- Millar J & Roots J 2012, *Changes in Australian agriculture and land use: implications for future food security*, *International Journal of Agricultural Sustainability*, vol. 10, no. 1, pp. 25–39.
- Rogers J, Scholz T & Gillan A 2015, *Dealing with livestock affected by the 2014 bushfires in South Australia: decision-making and recovery*, *Australian Journal of Emergency Management*, vol. 30, no. 2, pp. 13–17.
- Stelling A, Millar J, Millar J, Boon H, Cottrell A, King D & Stevenson B 2011, *Recovery from natural disasters: community experiences of bushfires in North East Victoria 2003–2009*, ILWS Report No. 65, Charles Sturt University, Albury, Australia.
- Thompson K 2013, *Save me, save my dog: Increasing natural disaster preparedness and survival by addressing human-animal relationships*, *Australian Journal of Communication*, vol. 40, no. 1, pp. 123–136.
- Thompson K, Every D, Rainbird S, Cornell V, Smith B & Trigg J 2014, *No pet or their person left behind: increasing the disaster resilience of vulnerable groups through animal attachment, activities and networks*, *Animals*, vol. 4, no. 2, pp. 214–240.
- Trigg J, Rainbird S, Thompson K & Bearman C 2014, *Capturing community experiences: South Australian bushfires January 2014*, Bushfire and Natural Hazards Cooperative Research Centre, Melbourne, Australia.
- Watson C 2011, *Protecting livestock, protecting livelihoods: the Livestock Emergency Guidelines and Standards (LEGS), Pastoralism: Research, Policy and Practice*, vol. 1, no. 9.
- Whittaker J, Handmer J & Mercer D 2012, *Vulnerability to bushfires in Australia: A case study from East Gippsland, Victoria*, *Journal of Rural Studies*, vol. 28, no. 2, pp. 161–173.
- Wilkie R 2005, *Sentient commodities and productive paradoxes: the ambiguous nature of human-livestock relations in Northeast Scotland*, *Journal of Rural Studies*, vol. 21, no. 2, pp. 213–230.
- Zottarelli L 2010, *Broken bond: An exploration of human factors associated with companion animal loss during Hurricane Katrina*, *Sociological Forum*, vol. 25, no. 1, pp. 110–122.

About the authors

Dr Bradley Smith is a Senior Post-Doctoral Research Fellow at the CQUniversity, Appleton Institute.

Dr Melanie Taylor is Senior Research Fellow at the Centre for Health Research, University of Western Sydney.

Dr Kirrilly Thompson is Senior Researcher and Cultural Anthropologist CQUniversity, Appleton Institute

For pets' sake, save yourself! Motivating emergency and disaster preparedness through relations of animal guardianship

Dr Kirrilly Thompson, Central Queensland University, Appleton Institute. ®

ABSTRACT

Animal ownership and animal attachment have been considered risk factors for surviving emergencies and disasters. However, there is reason to believe that pet guardianship and animal attachment could be reconfigured from risk factor to protective factor. This is because animal guardianship provides access to a number of social networks and communication channels that can be used to disseminate information. However, information alone is insufficient to drive action. This paper refines the 'pet as protective factor' proposal by detailing three inter-related influences that might be compelling in the transformation of intention to action. These are motivation (relevant and irrelevant), risk perception (likelihood and consequence of risk), and duty (as a form of responsibility to specific others, or a form of moral obligation). The actions of a guardian will not only affect an animal's emergency and natural disaster survivability, but their ability to continue in the co-dependent relationship of guardianship in which they are invested. A consideration of these influences reveals an additional dimension to the 'pet as protective factor' proposal. While it could be used to motivate people to save their pets 'for pets' sake' (and hopefully save themselves in the process), it could also convince people to save themselves for their pet's sake, and hopefully save their pets in the process.

Introduction

In emergency situations and disasters, people are faced with confronting decisions under unforgiving pressures. The relationships that guardians have with pets and animals are put to the test in these circumstances. Some animals are abandoned – willingly or unwillingly

(RSPCA QLD 2013, RSPCA QLD 2012). Sometimes this is with good reason or done with the animal's interests in mind, such as when communities assume that welfare organisations will attend to their animals in the recovery phase of a disaster. When animal guardians evacuate under duress or without preparation, they exacerbate demands on evacuation centres, emergency services, recovery services, and animal rescue and welfare organisations. When they risk their lives to save an animal by failing to evacuate (Heath *et al.* 2001, Heath, Voeks & Glickman 2001), returning prematurely to rescue their animals or saving unknown animals (Coates 1999) they also endanger the lives of others (Irvine 2006). This includes a whole network of family, friends, neighbours, and responders—even the animals they are attempting to save. In all these scenarios, people and animals can and do die (Thompson 2013). It is therefore unsurprising that this literature on animals and disasters characterises animals, animal ownership and animal attachment as risk factors for the survival of humans in emergencies.

There is reason to believe that pet guardianship and animal attachment could be reconfigured from risk factor to protective factor (Thompson 2013). The 'pet as protective factor' proposition is neither trivial nor esoteric. At least one pet can be found in approximately two thirds of households in Australia and other developed countries like the US (ACAC 2006, Leonard & Scammon 2007). There is also a significant number of non-owners whose emergency preparedness might also be motivated by animals. As many as one in four Australians have 'semi-owned a cat at some point in time' (Sharp & Hartnett 2009). With 91 per cent of pet owners in Australia reporting feeling 'very close' to their pet (ACAC 2010: 73), there is perhaps greater risk in not helping people save animals (Thompson *et al.* 2014).

Pet as protective factor, pet as preparedness motivator

To be a protective factor, people's desire to save their pets needs to motivate emergency preparedness actions. The populations most likely to benefit from this proposition are animal guardians who are unlikely to take preparatory action for the explicit purpose of saving themselves (perhaps due to apathy, pessimism or fatalism), or who are not responsible for other

human lives. This benefit arises because animal guardianship provides access to a number of social networks and communication channels that can be used to disseminate information. These channels include newsletters for pet-related groups, veterinary notice boards, dog obedience groups, council pet registration renewal forms, etc. (Thompson *et al.* 2014). However, information alone is insufficient to drive action (Gielen & Sleet 2003). Multiple theories have been developed to understand three levels of impact on behaviour. The first 'intrapersonal' level relates largely to psycho-cultural factors such as knowledge, attitudes, values, beliefs and motivation. The second 'interpersonal' level accounts for social relations, and the third 'community' level institutional or sociological factors (Glanz & Rimer, cited Gielen & Sleet 2003).

Animal attachment can influence human emergency preparation and response behaviours at all three levels. For example, people value animals and especially the role that pets play in their lives. They are attached to animals and are motivated to save them (Thompson *et al.* 2014). These intrapersonal factors have serious consequences for behaviour. They can result in a drive to save animal life that exacerbates (Heath, Voeks & Glickman 2001, Heath *et al.* 2001, Coates 1999) or mitigates (Thompson 2013, Thompson *et al.* 2014) the risk of injury or death during emergencies and natural disasters. The impact of animal attachment on human behaviour is clear at the intrapersonal level. Theories about animals as embodied extended human selves (Belk 1996, 1988) or projected self-objects (Brown 2007) make it possible to construct desires to save animals as synonymous with desires to save oneself. They also contend that social relations are not exclusive to humans. Humans form meaningful interspecies social relations with animals akin to other interpersonal social relations. Moreover, human relations with animals often implicate other humans such as veterinarians, first responders or animal rescuers. Finally, their animal-related networks can even extend to the community level where they participate in common interest groups (real or virtual).

Health promotion has been particularly concerned with theories articulating how humans transform intentions into actions. A 1991 initiative sought to reduce HIV infection by involving leading theorists in a review of behaviour change theories. Across five dominant theories eight factors were determined to 'account for most of the variation in health-related behaviours. These were intentions, environmental barriers, skills, outcome expectancies (or attitude), social norms, self-standards, emotional reactions, and self-efficacy' (Gielen & Sleet 2003).

However, these are insufficient for action. Developing and rehearsing a written bushfire action plan is a case in point. A person might not have written or initiated any action to write a bushfire action plan despite intending to write a plan, having nothing preventing them from writing a plan, having the skills necessary to write a plan, believing that having a plan will increase their survival, living and working amongst other people who have a written plan, seeing themselves as a planner, thinking that writing a plan is a good thing

to do, and being confident in their ability to write a plan. As stated in New South Wales Rural Fire Service campaigns, 'planning to make a plan is not a plan'.

In addition to the eight factors being insufficient to create action, their application to behaviour involving human-animal relations complicates the concept of self-efficacy, being 'one's confidence in one's ability to perform a specific behaviour'. Self-efficacy of an animal owner involves confidence in achieving a behaviour in association with an animal. While someone may feel capable of evacuating their home without an animal, they may not feel capable of locating their cat for successful co-evacuation. Moreover, one's self-efficacy may involve the perceived efficacy of an animal. The cat owner who perceives her cat as having no natural fire-sense is more likely to risk her life to save it than the owner who perceives her cat as having an innate ability to survive.

Nonetheless, these caveats for understanding the impact of human-animal relations on self-efficacy reveal three inter-related influences that might be more compelling in the transformation of intention to action; motivation (relevant and irrelevant), risk perception (likelihood and consequence of risk), and duty (as a form of responsibility to specific others, or a form of moral obligation).

At the outset of the 'pet as protective factor' proposal (Thompson *et al.* 2014, Thompson 2013), the focus was on leveraging people's desire to save their animals and pets to encourage them to undertake natural disaster preparedness activities (cleaning gutters, writing and rehearsing a bushfire action plan, making an evacuation plan, purchasing pet carriers, etc) for the overt purpose of saving their animals and pets with the concomitant effect of increasing human chances of survival. This mechanism of the 'pets as protective factor' proposal addresses motivation ('Do you want your pet to live?') and risk perception ('Are you aware that your animal is at risk and could die?'). In other words, 'I am motivated to save my pets, I think the likelihood of a fire happening and killing them is high (therefore I am going to take actions that increase their survival)'.

However, the 'pets as protective factor' proposal can do more than this. It's not just about motivating people to save their animals and pets 'for pets' sake', and hopefully saving themselves in the process. It is also about convincing people to save themselves for their pet's sake, and hopefully saving their pets in the process. The 'pet as protective factor' proposal uses social responsibility to motivate action. Most animal guardians feel a social responsibility to their animals in the same way as parents do for their children. In fact, many pets and domestic animals are like perpetual infants, never reaching a level of independence required to save their own lives. They cannot, for example, unchain themselves or open the front door when a fire front hits their homes.

Who depends on you?

Public Education Coordinator for the Everett Office of Emergency Management, Mary Schoenfeldt, took

advantage of the fact that many people take their social responsibility more serious than their personal responsibility. She instigated the 'Who Depends On You? Are You Prepared For Disasters?' (WDOY) campaign in Snohomish County, Washington, USA. It resulted in posters asking people to think about who depends on them, or who is counting on them in a disaster. The posters used images of people with their human and animal families. Although 'the 2009–2010 WDOY campaign did not create a dramatic increase in preparedness behavior across Snohomish County respondents ... [p]et owners that were familiar with WDOY were more likely to have extra supplies and an emergency plan' (Green *et al.* 2010). Campaign evaluators recommended including 'simple and clear directions on ways to prepare' (i.e. skills and self-efficacy), as well as '[c]ommunity-based social marketing techniques, which emphasize small steps, commitments, and incentives' (Green *et al.* 2010). The social responsibility appeal underpinning WDOY can be seen in campaigns promoting anti-smoking, safe working practices, and safe driving that focus on the impacts of death and illness on loved ones, and other 'fear appeals' (Williams 2012).

The WDOY approach extends the 'pets as protective factor' proposal by broadening its application. 'Owned' animals are entangled in a relationship of dependency, or guardianship, with humans. Indeed, many traditional definitions of 'domestication' emphasise the ways in which human control over the movements, breeding, and feeding of animals increases their vulnerability and dependence upon humans. Recognising the mutual dependence of humans and animals within recently identified processes of co-domestication (Fijn 2011) only reinforces the fact that many pets and animals are, if not *a priori* dependent on humans (through years of selective breeding and domestication), are inculcated in relations of dependence, or (expressed more favourably) relations of guardianship.

The actions of a guardian will not only affect an animal's emergency and natural disaster survivability, but their ability to continue in the co-dependent relationship of guardianship in which they have been recruited. That is, not only do guardians have a duty to ensure their animal's survival of a disaster, they have a duty to ensure their own survival so they can honour the co-dependent relation of guardianship into which their pets were 'involuntarily' recruited and thereby maintain their responsibility to continue to provide care. In short, the relational contract of guardianship charges guardians with the duty to ensure they and their animals survive an emergency.

Discussion

There is considerable potential for the 'pets as protective factor' proposal to be used to activate a sense of what might be called 'guardian's duty' or 'guardian's promise' in recognising, accepting and reciprocating the fact that animals and pets rely and are dependent on their owners or guardians. It is then the duty of others (such as emergency services community engagers) to support animal guardians

by providing or facilitating access to the information, skills, acceptance and capacity necessary to fulfil this contract of guardianship.

In the immediacy of an emergency, if guardians can be encouraged to evacuate themselves and their animals early and independently, demands on evacuation centres and emergency services should decrease. For farmers whose livestock herds are too large to evacuate, there needs to be a focus on property preparation, engagement with the latest fire science, and continuous and objective re-evaluation of self-efficacy as they or their partners age (Smith, Taylor & Thompson 2015).

Increasing the survival of pets and animals could also reduce pressure on health and counselling services and support rebuilding during the phase of recovery and rebuilding follow a natural disaster. While the emotional impact of the loss of human life is widely acknowledged, the loss of animals can also result in significant grief and psychological trauma (Lowe *et al.* 2009). When animal loss occurs alongside a traumatic event such as a disaster, the impact can be overwhelming (Zottarelli 2010). In the case of a natural disaster, humans often experience 'post-disaster distress' (Lowe *et al.* 2009), especially following 'enforced abandonment' (Hunt, Al-Awadi & Johnson 2008) of animals or feelings of blame for not having made the necessary precautions for the life of their animal. They may also experience disenfranchised feelings of guilt over animal loss, relative to human losses (Cordaro 2012).

This trauma is not specific to relations with individualised, domestic, companion animals. Farmers can also experience psychological trauma from the loss of livestock (Hall *et al.* 2004, Irvine 2009, Chur-Hansen 2010). Therefore, helping people to save animals is relevant not only to emergency planning and survival but to recovery and rebuilding in the days, weeks, months and years after the event. In light of this, it might be worthwhile asking animal guardians 'do you realise how much your animals depend on you to survive and recover from a disaster, and – for pets' sake – what are you going to do about it?'

Conclusion

This paper has extended earlier work on the 'pets as protective factor' proposal by recognising its two-pronged approach to motivating emergency preparedness and survival. First, it motivates people to make the recommended preparations for the explicit purpose of saving animal lives. Second, and as underlined by the 'Who Depends on You?' campaign in the US, it can motivate animal guardians to make the recommended emergency preparations for the explicit purpose of saving their own lives. However, both rely on the desire to save – and exercise a duty of care for – animals. Those with no desire or opportunity to care for an animal might be similarly motivated by being encouraged to think about the humans and animals that might depend on them in the aftermath of an emergency – even if they consider themselves presently disenfranchised from social networks.

The 'pets as protective factor' proposal is far from a panacea. Further research is needed to determine how to effectively incorporate it into behaviour change campaigns by activating motivation, risk perception and duty of care. It is highly likely to be fortified by other elements of behaviour change, such as positive reinforcement and reward for adequately preparing for something that may never occur. The contextual application of the proposal in combination with other behaviour change factors therefore requires empirical research. In the absence of an elegant antonym for 'dependent' in a relationship of dependency, there is also a need for research to identify the terminology that most resonates with animal owners and inspires a duty of care rather than seeks compliance. 'Responsibility' might be too austere, 'obligation' might be too onerous, 'duty' a little too earnest, and 'prerogative' a reinforcement for less than ideal states of preparation.

Finally, animals are clearly important for motivating emergency preparedness actions by their guardians. The fact that those actions can increase human safety suggests that animals should also be recognised as human guardians. Animals, therefore, cannot be excluded from matters of human safety during emergencies.

Acknowledgments

The ideas presented in this paper have been supported by a three-year grant from the Australian Research Council (DECRA 2013 Scheme) for a project titled 'Should I stay or should I go? Increasing natural disaster preparedness and survival through animal attachment'.

References

- Australian Companion Animal Council (ACAC) 2006, *Contribution of the Pet Care Industry to the Australian Economy*, 6th ed. Sydney: BIS Shrapnel.
- Australian Companion Animal Council (ACAC) 2010, *Contribution of the Pet Care Industry to the Australian Economy*, 7th ed. Sydney: BIS Shrapnel.
- Belk RW 1988, *Possessions and the Extended Self*. *Journal of Consumer Research*, 15, pp. 139–168.
- Belk RW 1996, *Metaphoric Relationships with Pets*. *Society and Animals*, 4, pp. 121–145.
- Brown SE 2007, *Companion Animals as Selfobjects*. *Anthrozoos*, 20, pp. 329–343.
- Chur-Hansen A 2010, *Grief and bereavement issues and the loss of a companion animal: People living with a companion animal, owners of livestock, and animal support workers*. *Clinical Psychologist*, 14, pp. 14–21.
- Coates L 1999, *Flood Fatalities in Australia, 1788–1996*. *Australian Geographer*, 30, pp. 391–408.
- Corado M 2012, *Pet loss and disenfranchised grief: Implications for mental health counseling practice*. *Journal of Mental Health Counseling*, 34, pp. 283–294.
- Fijn N 2011, *Living with herds: Human–animal coexistence in Mongolia*, Cambridge University Press.
- Gielen AC & Sleet D 2003, *Application of behavior-change theories and methods to injury prevention*. *Epidemiologic Reviews*, 25, pp. 65–76.
- Green R, Grant R & Huxford CJ 2010, *Who depends on you? Are you prepared for a disaster? Campaign analysis*. Resilience Institute; Huxley College of the Environment, Western Washington University.
- Hall MJ, Ng A, Urano RJ, Holloway H, Fullerton C & Casper J 2004, *Psychological Impact of the Animal–Human Bond in Disaster Preparedness and Response*. *Journal of Psychiatric Practice*, 10, pp. 368–374.
- Heath SE, Kass PH, Beck AM & Glickman LT 2001a, *Human and Pet-related Risk Factors for Household Evacuation Failure During a Natural Disaster*. *American Journal of Epidemiology*, 153, pp. 659–665.
- Heath SE, Voeks SK & Glickman LT 2001b, *Epidemiologic features of pet evacuation failure in a rapid-onset disaster*. *Journal of the American Veterinary Medical Association*, 218, pp. 1898–1904.
- Hunt M, Al-Awadi H & Johnson M 2008, *Psychological Sequelae of Pet Loss Following Hurricane Katrina*. *Anthrozoos*, 21, pp. 109–121.
- Irvine L 2006, *Animals in Disasters: Issues for Animal Liberation Activism and Policy*. *Animal Liberation Philosophy and Policy Journal*, 4, pp. 1–16.
- Irvine L 2009, *Filling the ark: animal welfare in disasters* Philadelphia, Temple University Press.
- Leonard HA & Scammon DL 2007, *No Pet Left Behind: Accommodating Pets in Emergency Planning*. *American Marketing Association*, 26, pp. 49–53.
- Lowe SR, Rhodes JE, Zwiebach L & Chan CS 2009, *The impact of pet loss on the perceived social support and psychological distress of hurricane survivors*. *Journal of Traumatic Stress*, 22, pp. 244–247.
- RSPCA QLD 2012, *South West Queensland Flood 2012: Lessons Learned*. Queensland, Australia: RSPCA QLD.
- RSPCA QLD 2013, *RSPCA Queensland Response to Ex Tropical Cyclone Oswald*. Queensland, Australia: RSPCA QLD.
- Sharp A & Harnett N 2009, *Semi-owned Cat Attitudes and Behaviours in South Australia*. Adelaide, South Australia: Ehrenberg-Bass Institute.
- Smith B, Taylor M & Thompson K 2015, *Risk perception, preparedness and response of livestock producers to bushfires: a South Australian case study*. *Australian Journal of Emergency Management*, vol 30, no. 2, pp. 36–40.
- Thompson K 2013, *Save me, save my dog: Increasing natural disaster preparedness and survival by addressing human–animal relationships*. *Australian Journal of Communication*, 40, pp. 123–136.
- Thompson K, Every D, Rainbird S, Cornell V, Smith B & Trigg J 2014, *No Pet or Their Person Left Behind: Increasing the Disaster Resilience of Vulnerable Groups through Animal Attachment, Activities and Networks*. *Animals*, 4, pp. 214–240.
- Williams KC 2012, *Fear appeal theory*. *Research in Business and Economics Journal*, 5, pp. 1–21.
- Zottarelli LK 2010, *Broken Bond: An Exploration of Human Factors Associated with Companion Animal Loss During Hurricane Katrina*. *Sociological Forum*, 25, pp. 110–122.

About the authors

Dr Kirrilly Thompson is a Senior Research Fellow at the Appleton Institute, the Adelaide campus of Central Queensland University. She is a trained anthropologist whose research interests are in human–animal relations and the cultural dimensions of risk. Kirrilly is leading a three-year ARC DECRA-funded project to improve the disaster survival and resilience of animal owners and carers.

Safeguarding children from animals in emergencies

Susan Davie, Save the Children, explains why planning for animals provides a point to include simple child safeguarding activities.

ABSTRACT

Children are particularly vulnerable when disasters occur yet their unique needs are not routinely addressed in Australian emergency management plans. In contrast, planning for the needs of animals is becoming standard practice with a primary aim to address animal welfare issues and protect communities. There is opportunity when planning for animals in emergency management to address child safeguarding with regard to both physical and psychological harm that can be caused by stressed animals or the loss of a pet. These are issues that arise predominantly in the relief and recovery phase. This paper explores some key areas that should be considered when reviewing emergency management plans and suggests that planning for animals can provide a point to include simple child safeguarding activities.

Introduction

Emergency management planning for the needs of animals occurs at a national, state and local level with a focus on helping people make decisions about their response in emergencies, animal welfare, and protection of livelihoods. In stark contrast, emergency management practice in Australia does not routinely address the unique needs of children (Davie 2013). Historically, animal protection laws preceded legislation to protect children. The cruel neglect of the child Mary Ellen in New York in 1874 raised the issue of the lack of formal protection for children. Concerned neighbours asked a missionary to check on the child and there was evidence of physical abuse, malnourishment and neglect. With no legislation in place a group of concerned citizens brought the matter before the courts under existing animal cruelty legislation (Tomison 2001). The case was successful and the child was granted protection. This laid the foundation for the development of the child welfare sector.

Protecting children is seen as a vital role of government and the foundations for Australia's systems stem from the 1860s with child welfare formalised through legislation (Swain 2014). The first animal protection, anti-cruelty legislation was enacted in the 1830s (White 2007). Emergency management practitioners have ensured that planning encompasses animal welfare but have not been as proactive with regard to the needs of children. This issue has been recognised in other high income countries, perhaps most notably in the United States where the National Commission on Children and Disasters was established by the US President following *Hurricane Katrina*. The commission's interim report coined the term 'benign neglect' with respect to the unintended neglect of children in emergency management practice due to the lack of focused planning for their needs (National Commission on Children and Disasters 2009).

Children are particularly vulnerable when emergencies and disasters occur and this has been well documented (Allen *et al.* 2007, Anderson 2005, Gribble & Berry 2011, Peek 2008). When reviewing and updating emergency management plans every opportunity should be taken to ensure the needs of children are included. A focus on safeguarding children from harm from animals can provide planners with tangible areas within their plans that can be updated to include practical child safeguarding activities.

Relief centre planning

One key area that provides a tangible focus for emergency management planners to review and update their plans is in the relief phase of emergencies. The needs of animals are outlined in the *Emergency relief handbook*, which includes planning considerations for children and animals (Australian Red Cross and Victorian Department of Human Services 2013). However the handbook does not highlight opportunities where the inclusion of child safeguarding activities can be taken in regard to hazards that may be posed by animals.

Companion animals

Catering for companion animals in relief centres will alleviate stress of both pets and their owners. However, if companion animals are present in relief centres

and their precincts there are hazards to children that must be considered. It may not be possible to have all animals in cages and dogs may be tethered on leads. Safeguarding children from bites and scratches is vital to ensure that children do not sustain injuries that may require medical attention. Every effort should be made to ensure that children are not able to access areas where companion animals are sheltering unless they are accompanied by an adult. Parents and carers should be informed of the risks of injury from animals and children should not be allowed to touch animals that do not belong to them. All pet owners and evacuation centre staff should be aware of this safety requirement.

In some cases children may be comforted by petting their companion animals. This may help with the psychosocial impacts of the emergency, but health risks should be considered. Stressed animals can be uncharacteristically aggressive and there should be an adult present at all times when children are with their pets.

When children are in contact with their pets, it is important they are able to wash their hands after touching animals. If hand washing facilities are not child-friendly, consider a bucket of water with soap that children can easily reach. Ideally this would be located close to the animal area to encourage hand washing when contact with the animal finishes. Hand sanitisers are another option but are only effective if hands are free of grime and dirt, so soap and water will be required after handling animals. This is a simple addition to evacuation centre procedures.

Large animals

In some locations, large animals may also be present at evacuation centres and stressed horses and other stock can pose a risk to children. Large animals have the potential to cause injury and children are particularly vulnerable due to their small size and stage of cognitive development. Parents and carers

Simple checklist:

- Does the evacuation centre plan consider child safeguarding from hazards posed by animals?
- Are children in a secure area away from animals that may pose a danger?
E.g. pets or stock.
- Are children able to safely access all relevant areas of the centre without passing animals?
E.g. bathrooms and play areas.
- If children are in contact with animals is there always an adult present?
- Is it clear to everyone that children should not touch animals that do not belong to them?
- Are there hygiene standards in place?
Can children reach wash basins?
If not, are alternatives provided?
E.g. Buckets and soap.



Children and pets share a special bond within a family

should be informed of the risk and asked not to allow children to go near large animals that may be in the vicinity of the evacuation centre.

Conclusion

Every opportunity should be taken by emergency management practitioners to incorporate the unique needs of children into their planning. Planning for the needs of animals is an important aspect of emergency management practice and applying a child-focused lens provides a tangible point in the planning process to ensure that children are safeguarded from hazards posed by animals.

References

- Australian Red Cross and Victorian Department of Human Services 2013, *Emergency relief handbook: A planning guide*.
- Allen GM, Parillo SJ, Will J & Mohr JA 2007, *Principles of Disaster Planning for the Pediatric Population. Prehospital and Disaster Medicine*.
- Anderson WA 2005, *Bringing Children into Focus on the Social Science Disaster Research Agenda. International Journal of Mass Emergencies and Disasters*, 23, pp. 159–175.
- Davie S 2013, *Don't leave me alone. Protecting children in Australian disasters and emergencies. Government report card on emergency management planning*.
- Gribble KD & Berry NJ 2011, *Emergency preparedness for those who care for infants in developed country contexts. International Breastfeeding Journal*, 6.
- National Commission on Children and Disasters 2009, *Interim Report*. At: <http://archive.ahrq.gov/prep/nccdreport/nccdreport.pdf>.
- Peek L 2008, *Children and Disasters: Understanding Vulnerabilities, Developing Capacities, and Promoting Resilience - An Introduction. Children, Youth and Environments*, 18, pp. 1–29.
- Swain S 2014, *History of child protection legislation. Australian Catholic University*.
- Tomison AM 2001, *A history of child protection. Back to the future. Family Matters*, p. 60.
- White S 2007, *Regulation of animal welfare in Australia and the emergency Commonwealth: Entrenching the traditional approach of the states and territories or laying the ground for reform? Federal Law Review*, p. 35.

Achieving a global goal for the protection of animals in disasters: India's potential impact

Dr Wayne Ricketts, World Animal Protection, describes how India's collaborative approach to disaster management has benefits for protecting the lives of animals in disasters.

Introduction

Every year millions of animals and their owners are affected by natural disasters. Animals are affected in the same way as we are and millions of animals are killed or injured as a result. Most of the world's poorest people are heavily reliant on animals for their food security and livelihoods. Animals are also companions and are valued family members. Yet often, animals are not included in response plans, recovery projects, contingency planning and risk reduction measures, due to a number of reasons. These include insufficient knowledge and skills, lack of resources, unassigned responsibility and a lack of organisation.

Protecting animals must therefore be an integral part of effective emergency planning and response. Integrating animal welfare into disaster risk reduction, resilience and preparedness planning will significantly reduce suffering, facilitate and accelerate recovery, and limit post-disaster aid dependency. This article looks at the approach India is taking with disaster management and discusses what learnings Australia and New Zealand might benefit from or build upon.

World Animal Protection aims to achieve global change for the protection of animals in disasters by encouraging countries to adopt or adapt disaster management systems implemented by other countries. In one respect it's also about not 'reinventing the wheel'. While it is unlikely that one country can or would pick up one country's disaster management system in its entirety and overlay it on its own infrastructure, there are many overarching high-level principles and discrete systems that other countries might wish to adapt.

India's vulnerability

India is vulnerable to natural disasters with more than 75 per cent of its states being disaster-prone. Much of India's coastline is susceptible to cyclones and tsunami while around two thirds of the landmass is prone to earthquakes and droughts. Flooding is also a common event¹. During the last 30 years, the country has suffered over 400 major disasters. Each year India

experiences average disaster losses of US\$1 billion. Direct natural disaster losses amount to two per cent of India's GDP and up to 12 per cent of central government revenue².

The majority of livestock (nearly 70 per cent) is owned by 67 per cent of small, marginal farmers and landless people³. Therefore, as in many other countries, vulnerable members of the community are most at risk (or least resilient) when a disaster strikes with potential devastating long-term effects on their livelihoods. Hundreds of thousands of animals suffer during disasters in India annually. On average nearly 100 000 cattle are lost annually.

India's disaster management system

Using World Animal Protection's Four Pillars of Change model i.e. policy, legislation, national co-ordination and organisation, it can be seen that India is developing a sustainable model for animal welfare in emergencies. World Animal Protection believes that in order to have a robust, effective and sustainable disaster system all four pillars must be addressed.

India recognises the importance of including animals in disaster planning. The National Policy on Disaster Management 2009⁴ states that:

'It is necessary to devise appropriate measures to protect animals and find means to shelter and feed them during disasters and their aftermath, through a community effort, to the extent possible. The Departments/Ministries of the Government of India and the States concerned should devise such measures at all levels.'

1 National Disaster Management Authority.
At: www.ndma.gov.in/en/vulnerability-profile.html.

2 Lester R & Gurenko E 2003, Report No. 26844-IN World Bank Document India Financing Rapid Onset Natural Disaster Losses in India: A Risk Management Approach, OPD Department (Operations and Policy Department, World Bank) of the Financial Sector Vice Presidency.

3 Reddy RM, Rao RN, Reddy MG 2012, Livestock Development in Andhra Pradesh: Status and Potential. Centre for Economic and Social Studies, Hyderabad. At: www.cess.ac.in/cesshome/wp/RULNR-working-paper-16.pdf.

4 National Policy on Disaster Management 2009.
At: www.preventionweb.net/english/professional/policies/v.php?id=12733.

This national policy is supported by and recognised in legislation. The *Disaster Management Act 2005* defines what a disaster is and requires there to be a *National Disaster Management Plan* for disaster management for the entire country. The national plan is approved by the National Disaster Management Authority. It is intended that animal welfare will be integrated into India's national plan and programs as well as state and district disaster management authorities' policies, plans and programs by 2017. This will have a positive impact on the millions of animals in India and their owners by building resilient communities and protecting livelihoods.

In regard to national co-ordination and organisation, India has a vertically-integrated disaster management structure with the National Disaster Management Authority as the apex authority on disaster management in the country reporting directly to government. This cascades down to state disaster management agencies and district disaster management agencies. In turn these disaster management agencies are supported by a plethora of other entities including other government agencies, academic institutions, science and technical institutions, the corporate sector, and armed forces.

One such agency is the National Disaster Response Force which is a disaster response agency under the direction of the National Disaster Management Authority. Established in 2009 for disaster management and specialised response to natural and man-made disasters, it consists of ten battalions of central armed police forces and functions at a state and central level. While historically the National Disaster Response Force has principally been concerned with human welfare in natural and man-made disasters, due to the influence of World Animal Protection it has increasingly become involved in animal welfare. Veterinary teams associated with the battalions are developing animal welfare and medical expertise (through World Animal Protection) in disasters and, in the future, will provide rescue and veterinary services for animals immediately following a disaster.

Protecting animals in disasters secures livelihoods

Protecting animals in disasters is not only good for animal welfare it's also about saving productive assets. The loss of animals in disasters can devastate people's livelihoods. Livestock represents a safety net for many families and the loss of such productive assets will impact significantly on lives and livelihoods. Including animals in disaster loss mitigation strategies is a secure and economical long-term investment⁵. One cost benefit study carried out in India following the Assam floods long-term response (2012-2013)



Humans and animals are involved in disasters and care for both is important.

showed a US\$96 benefit for every \$1 spent⁶. This was largely due to the assistance provided by World Animal Protection, which included preparedness training for emergencies, preparation of village veterinary disease management plans, provision of educational materials, preparation of household veterinary first aid kits, a disaster risk reduction workshop, and construction of animal shelters.

India's potential impact on effecting global change

The vision to achieve global change by encouraging countries to adopt or adapt disaster management systems implemented by other countries can be realised. India's disaster management system has the potential to impact or influence other disaster management systems, such as Australia and New Zealand.

5 FAO Questions and Answers, Pakistan Floods, At: www.fao.org/fileadmin/user_upload/newsroom/docs/pakistan_qa.pdf.

6 Economists at large, 2014, A benefit-cost analysis of WSPA's 2012 intervention in the Dhemaji district of Assam, India / Final Report prepared for the World Society for the Protection of Animals, p. 7.



Protecting animals in disasters secures livelihoods.

One method of assessing progress is to apply the World Animal Protection Four Pillars of Change model.

Policy is a statement by the government that drives legislation, co-ordination and resourcing in emergency management. India does have a national policy in which the government formally recognises the importance of including animals in disaster planning and outlines responsible parties. The *New Zealand Animal Welfare Strategy*⁷ has a requirement for better planning to prevent animal welfare problems in adverse events. The *Australian Animal Welfare Strategy and National Implementation Plan*⁸ (developed by the Australian Government in conjunction with Australian states and territories, and now managed by the states and territories) makes reference to improving planning for animals in disasters.

Legislation legally defines who is responsible and what the minimum requirements are in delivering this responsibility should an emergency arise. While India's *Disaster Management Act 2005* is principally focused on human welfare in emergencies, it is intended that animal welfare will be integrated into India's national plan and programs as well as state and district disaster management authorities' policies, plans and programs by 2017. Currently World Animal Protection is working collaboratively at both a central and state (five states)

level to assist with the incorporation of animal welfare into both national and state plans. It is clear that it is important to define responsibilities in an emergency both at the planning and the response stages.

In Australia each state and territory has emergency management legislation and an emergency management plan. These integrate animals to varying extents. In addition, Australian states and territories have recently endorsed the *National Planning Principles for Animals in Disasters*⁹ that provides guidance for the drafting of disaster management plans. A number of the states and territories are making solid progress in operationalising the policy guidance following endorsement. New Zealand has two pieces of legislation that define who is responsible for animals in emergencies.

National co-ordination means that animal welfare delivery needs to be co-ordinated and resourced appropriately while **Organisation** denotes co-ordination of existing assets and the creation of new assets for the most appropriate management of animals in disasters. The two concepts are more conveniently discussed jointly. Together they probably present the biggest challenge for governments and communities. While it is relatively straight forward to put policy and legislation in place and it is reasonably inexpensive, it is more problematic, complicated, and fiscally challenging to resource capacity building and disaster management infrastructure across a nation.

7 New Zealand Animal Welfare Strategy. At: <http://archive.mpi.govt.nz/biosecurity-animal-welfare/animal-welfare/new-zealand-animal-welfare-strategy>.

8 Australian Animal Welfare Strategy. At: www.agriculture.gov.au/animal/welfare/aaws/australian-animal-welfare-strategy-aaws-and-national-implementation-plan-2010-14?wasRedirectedByModule=true.

9 National Planning Principles for Animals in Disasters. At: www.australiananimalwelfare.com.au/content/pets-and-companion-animals/national-planning-principles-for-animals-in-disastersPCA.

India is fortunate to have a well-defined disaster management structure. This in itself is an important learning for any country. This infrastructure coupled with a strong commitment to animal welfare by India's current government should provide the co-ordination and allocation of animal welfare delivery, once animal welfare is integrated into India's national and state plans and programs; intended by 2017. This also applies to co-ordinating existing assets and the creation of new assets for the most appropriate management of animals in disasters. In addition, there is a plethora of support agencies. Currently it has been identified that resources are still lacking for effective animal handling and rescue operations, structural facilities holding animals in emergencies, and trained human resources for managing animals in emergencies.

One of the noteworthy learnings from India is its joint approach to disaster management as the government recognises that it cannot achieve this alone. It is therefore working with many different agencies and entities to achieve the inclusion of animal welfare in government policy, plans and programs. An example is the acceptance of NGOs, such as World Animal Protection in the animal welfare space. The Indian Government recognises the expertise of World Animal Protection in disaster management and has committed to working collaboratively with the organisation for the betterment of the lives of animals in India.

This collective approach has allowed World Animal Protection to successfully encourage the development of a disaster management system. World Animal Protection is working co-operatively with government (via government ministries and the National Disaster Management Authority), state and district disaster management agencies, academic institutions (veterinary schools), humanitarian NGOs, and the National Disaster Response Force personnel. One example is a country-wide training program for veterinary students in emergency management that will ultimately result in a population of veterinarians (called Veterinary Emergency Response Units) with skills in veterinary emergency management who will not only be able to educate their clients on emergency planning for animals but also provide a capable veterinary resource during emergencies. This program does not exist in Australian and New Zealand veterinary curricula, although veterinarians in both countries often assist in disaster response. It should be noted that Tasmania has recently established a Veterinary Emergency Response Team to provide triage services to all animal species affected by disasters.

There are many other examples of this collaborative approach in India:

- A jointly-organised national conference on animal disaster management with the National Disaster Management Authority to address issues related to animals in disasters.
- Hosting training for state animal husbandry staff on the management of animals in emergencies including training on the application of the *Livestock Emergency Guidelines and Standards*.
- Hosting simulation exercises on management of animals in disasters in co-ordination with government and state disaster management agencies and emergency services. (Note: as a result of these simulation exercises there were successful interventions during the 2013 Uttarakhand flash floods and the 2014 *Cyclone Hudhud* in Andhra Pradesh.)
- Training for the National Disaster Response Force on animal behaviour, veterinary science, and humane animal handling techniques in emergencies so that they can provide veterinary and rescue services.

It is important to recognise the collaborative approaches Australia and New Zealand are also taking in the disaster management space. The interim National Advisory Committee for Animals in Emergencies in Australia involved stakeholders from all levels of government, industry, animal welfare and humanitarian NGOs and the National Veterinary Association. This Australian collaborative approach was highly successful. Disaster responses also result in many agencies working together. In New Zealand the current review of the *National Civil Defence Emergency Management Plan* is drawing together a number of agencies in recognition that a joint approach is necessary. However more can still be done, including, for example, joint conferencing, training and simulation exercises such as in India.

Conclusion

The frequency of natural disasters has increased exponentially in the last two decades. While the debate continues about the role of climate change, it is predicted that the frequency and intensity of natural disasters will continue to escalate¹⁰. Acknowledging the role of animals in our lives whether as production animals, working animals or companions behoves us to ensure that protecting animals is an integral part of effective disaster planning and response.

Building a robust and sustainable disaster management system is challenging. Using the World Animal Protection philosophy of encouraging countries to adopt or adapt disaster management systems implemented by other countries is a credible solution to addressing that challenge. While each country will build its own disaster management system in its own unique way, India's collaborative approach shows what can be achieved in one country. India's approach provides a local blueprint for achieving global change in a collaborative manner so that all animals can be protected in disasters.

10 Thomas V, Albert JRG & Perez RT 2013, Climate-Related Disasters in Asia and the Pacific, No. 358, July 2013, ADB Economics Working Paper Series. At: www.adb.org/publications/climate-related-disasters-asia-and-pacific.

Helping hands, hurting hooves: towards a multidisciplinary paradigm of large animal rescue

Dr Kirrilly Thompson, Appleton Institute, Central Queensland University, MaryAnne Leighton, Equine Emergency Rescue, and Professor Chris Riley, Massey University, use case studies to show that the safety of humans and animals during rescue are mutually dependent. [®]

ABSTRACT

Large Animal Rescue (LAR) entails the removal of a large animal from a place of danger to one of safety by the most humane method, with an overriding regard for the safety and welfare of responders as well as members of the public. However, there has been little consideration for the ways in which human and animal safety are mutually incorporated and the unique challenges posed by the human-animal bond with respect to LAR. Moving beyond the focus of previous authors on its technical aspects, this article reconciles the two perspectives with a multispecies, anthrozoological account of LAR. It provides examples from three previously undocumented rescues of horses trapped in mud, flood waters, and a gully to illustrate the ways in which the safety of humans and animals are mutually dependent. Above all, the case studies signal the need for a shift towards multidisciplinary approaches to LAR that engage emergency services, engineering, veterinary sciences and social sciences in collaborative knowledge sharing and creation.

Introduction

Large animal rescue occurs during the response phase to a natural or anthropogenic disaster, emergency or accident where specialised training and equipment are required to rescue an animal such as a horse, donkey, cow, other livestock, or ungulate wildlife. Successful and safe rescue requires emergency services personnel with specialist training, access to equipment and engineering resources, local knowledge, an understanding of the social psychology of animal owners. It also requires the co-ordinated efforts of emergency services providers with experts such as veterinarians.

With advances in veterinary medicine, many injured large animals that previously would have died now have a viable chance of survival (Bedenice 2007). However, responders must work within a defined system of incident management and triage, and do so before the situation is irrecoverable. LAR training programs and rescue teams have been developed and refined internationally. More formal organisations include the British Animal Rescue and Trauma Care Association (BARTA¹). Since 2008, 90 per cent of UK fire and rescue services have established a formal LAR capability and are trained to a national standard (Green 2014). Their work is informed by well-respected manuals on the topic (Leighton & Staples 2010, Gimenez, Gimenez & Stafford 2007). However, there has been little explicit consideration of the ways in which human and animal safety are mutually incorporated and the challenges posed by the human-animal bond.

Three Australian case studies have been selected for discussion largely due to the availability of first hand, well-documented case material and permissions. The choice to include examples of 'successful' and 'unsuccessful' rescues is intentional.

Case study 1: Mud rescue

A 20-year-old horse was found stuck in mud in a dam. Its owner estimated the horse had been trapped there for around 12 hours. She called a veterinarian, fire and emergency responders.

The Incident Controller (IC) had attended a 'train the trainers' weekend where he had learnt basic LAR techniques but not skills specific and critical to successful mud rescues. Normally this would entail the use of water injection around the animal's limbs to release the suction of the mud before attempting to extricate the animal (Gimenez, Gimenez & Stafford 2007).

The responders had trouble getting strops around the horse, so one volunteer lay on the horse's back to do it manually. This is not a good option and LAR training provides better ways to handle large animals during mud rescues. Once the strops were in place, it took 40 minutes from the time they began pulling to the time

1 British Animal Rescue and Trauma Care Association. At: <http://bartac.org/>.



Rescuing large animals from mud is one of the most difficult and dangerous of these rescues. Here the horse's owner supports its head on a bag of potting mix while she clears mud from its mouth and nostrils.



The front strop should be pulled at a 90-degree angle to the horse's body to avoid drag across the horse's face and eye.

the animal was extricated from the mud because the suction around the limbs had not been released. During that time, rescuers maintained the tension on the strops. The trapped horse was pulled at an angle instead of in a straight line, dragging the strop across the horse's face.

Once the horse was extricated, it was dragged up a bank and left prone about two metres from a barbed wire fence. As the horse instinctively struggled to stand, it slid closer and closer to the barbed wire. It was too exhausted to prevent its head from hitting the ground after each attempt to rise. The horse's eye was swollen from trauma associated with the repeated and failed attempts to rise, and the cornea on the downside eye was severely lacerated because a buckle on the halter kept sliding across it during the rescue.

The entire rescue took six hours. It is estimated that with using a Nikopoulos needle and water to release the suction of the mud, it could have taken 30 minutes. The horse had huge sores on its torso from the straps. Because it was resting on one side for so long, it developed pressure sores over the underside of its body and a severely swollen eye. The horse was too exhausted to eat or drink. The dark brown colour of its urine was consistent with dehydration combined with rhabdomyolysis (rapid muscle fibre destruction). The horse never rose and, following consultation with a veterinarian, was humanely euthanised the following day.

Case study 2: Flood rescue

During flood preparations, a Royal Society for the Prevention of Cruelty to Animals (RSPCA) inspector was notified of horses stranded on a river island. The water was too high and fast to safely or successfully walk the horses to safety. After consultation between the inspector, responders, and local equine veterinarians, it was decided to return the following day and remove them from the island by boat. As flood rescue requires the horses to be prone and sedated for evacuation by boat, this became a highly organised joint rescue involving four RSPCA inspectors, four responder volunteers, and two veterinarians, all of whom were trained in LAR. Equally importantly some had swift water training.

The following day, the IC identified the hazards posed by the rapidly rising water and assessed the risks to the rescue team. He concluded that the rescue plan was viable and selected procedures that would avoid injuring horses or rescuers. He chose a flat-bottomed bow-loading flood boat, the front of which folded down to form a flat surface for loading a laterally recumbent (sedated or anaesthetised) horse strapped to a rescue glide (an equine version of a backboard for humans).

The IC divided the rescue team into two groups. Two RSPCA inspectors were with the land-based team who remained on shore to help unload the horses and monitor their recovery from sedation. The island rescue team launched the boat and headed downstream. The IC radioed a television helicopter that was filming the flood and asked them to fly over the densely vegetated island to locate the horses. The pilot hovered



The hauling party dragged the first horse, which was sedated and strapped securely to a rescue glide, to the flat-bottomed bow-loading flood boat. Two vets (at right in blue) constantly monitored the medical condition of the horse.



The 1.2 x 2.4-metre rescue glide for large animals fits neatly into a flood boat. The vet (at right) was ready to administer further sedation should the horse begin to regain consciousness during the river crossing.

over the safest point for the boat to land and pointed the helicopter's nose toward the horses so rescuers wouldn't waste time searching.

The rescue boat operator navigated the boat through uprooted trees and other debris in the flooded river that, in the intervening 24 hours, had risen a further 1.5 metres. Once safely on the island, the remainder of the team stayed with the boat while a responder and two inspectors approached the horses.

Despite being unhandled for many years, and fearful of the floodwaters and the helicopter, the horses were coaxed into being haltered and led to the handling point near the boat. The veterinarian sedated the first horse and the crew quickly put rescue straps around its torso and dragged it onto a rescue glide. One responder acted as the 'veterinarian assistant' responsible for making sure the veterinarian was never in harm's way (especially while she was distracted when administering drugs and disposing of used sharps into a suitable container).

Both veterinarians accompanied the horse on the boat for the ten-minute journey to the boat ramp on the opposite bank, with supplementary sedation at the ready to ensure the safety of all on board. Once on dry land the rescue glide made it easier to transfer the horse to a low-loader trailer. It was driven a couple of hundred metres to a holding yard (safe zone) where one veterinarian stayed with it until it recovered. By this time the second rescue glide was on the rescue boat and the team was on its way back to the island to repeat the process for the second horse with a second veterinarian.

This was the first rescue of this kind that had been conducted by any of the three agencies. Its success was attributed to *all* persons involved being a LAR instructor or having undertaken at least the two-day LAR training course. The rescued horses were physically unscathed and later adopted.

Case study 3: Gully rescue

A 32-year-old mare, with arthritis and Cushings disease, had fallen into a gully. It was at the bottom of a steep, deep, narrow gully. Its hooves were higher than its body and its head was positioned lower than the body and legs. It was unable to stand even with assistance. The Rural Fire Brigade was undertaking LAR training at the time of the call and decided to combine training with the rescue.

As typically encountered with entrapped horses, the mare had periods of calm followed by periods of frantic thrashing as it tried to get up, repeatedly smashing its head on the ground with each attempt. Upon the brigade's arrival, the horse owner's husband was in the 'hot zone' (the zone of greatest risk to rescuers), trying to calm the mare.

Because it was a Sunday, it took almost an hour to locate a veterinarian who was able to attend, and another 30 minutes before she arrived. That gave the brigade crew and their training instructor time to assess the risks, plan and make contingency plans, unpack equipment and establish hot, warm and cool zones in accordance with incident response protocols (Leighton & Staples 2010) and an equipment dump.



Image: Virginia Leighton-Jackson

Elderly horses and the very young are particularly vulnerable to becoming trapped.

Because the mare had been down for six hours by the time the veterinarian arrived, she decided to fully anaesthetise, rather than just sedate the animal. The mare was lying on a tree root that extended the length of her body preventing the use of the strop guide. The lifting strops were 'flossed' (sliding backwards and forwards) under the mare's shoulder to the girth, and under the rump to its flank. The First Officer assisted the veterinarian to place a padded hood over the mare's head and halter to protect it from further injury. Four members of the crew attached the sling strops to the crane. Two rescuers stood clear while two others supported the head during the lift.

Once extricated, the mare was rolled into a comfortable and safe position for recovery from anaesthesia. In spite of its age and the length of time it was trapped, the mare recovered fully. The brigade is now the lead agency for LAR in their region of the state. In the 18 months since this rescue, the number of rescues has risen from an average of one horse or cow rescue per year to nearly 20 large animal rescues (greater than one per month).



Image: Virginia Leighton-Jackson

Wide strops around the horse's girth and flank prevent trauma to the body in those areas. A spreader bar offers a two-point lift to prevent the animal becoming unbalanced when lifted vertically by a crane.



A padded hood prevents injury to the horse's head during the rescue and while it recovers from anaesthesia.

Discussion

The difficulties described in the case studies demonstrate the need for a collaborative, multidisciplinary paradigm for animal rescue. LAR requires the same organisational principles and teamwork as for a road crash rescue or house fire. While the importance of specialist LAR training for first responders seems obvious (Smith, Thompson & Taylor 2015), the case studies illustrate the significance of all stakeholders being proficient in:

- the principles and protocols of LAR
- multidisciplinary teamwork and communication
- the unique role and responsibilities as a responder/ veterinarian/ owner/ inspector etc (see also Farm Animal Welfare Committee 2012).

While introductory training is useful it is not a replacement for comprehensive training involving responders and veterinarians, and constant revision and practise. Overseas, minimum training standards and effective interagency collaborations have resulted from the creation of a national body. This provides capacity and knowledge that could be adapted to an Australian emergency services context for wide benefit. Beneficiaries of BARTA, for example, have included 'sporting equine event managers, military mounted regiments, welfare organisations, livestock and equine owners, hauliers, veterinary hospitals and NGOs' (Green 2014).

Training may also have secondary benefits in providing the impetus for stakeholders to engage in related practices and behaviours beyond the actual rescue event. For example, owners should appreciate the benefits of ensuring their domestic large animals can

be easily caught, haltered, handled and transported by strangers. They might be more capable of conducting informal risk assessments of their animal's surroundings based on their specific knowledge of the local environment. By reducing the exposure of their horses to risks such as dams, they can reduce the incidence of rescues. Veterinarians might be motivated to improve their knowledge of emergency medicine of stressed animals under challenging working environments. Indeed, the inception of BARTA has seen 'the primary role of the veterinarian shifting from performing post incident care, to providing essential safety measures for responders in order to carry out rescues' (Green 2014). Small animal veterinarians might become more acutely aware that they could be called on to assist in LAR, even in urban environments, as can be the case with livestock transport accidents (Miranda-de la Lama *et al.* 2011) and animal-vehicle accidents (Rowden *et al.* 2008). First responders could appreciate the benefits of understanding and gaining skills to manage the manifestation and impact of close human-animal bonds on the behaviour of animal owners, the public, and the media. This knowledge could improve interdisciplinary communication while participating in or leading a rescue, and therefore improve the prospect of a successful outcome following a rescue.

The case studies reported are pertinent reminders that:

- while large animals present challenges to rescue due to their size and weight, planning and co-ordination can be of more use than brute force and urgency
- while responders may be in leadership positions during rescues, the rescue can be effected by their communication style and approach with owners and veterinarians

- while owners can be a hindrance, their expert knowledge can contribute to safe and successful rescue, and the location of suitable safe zones
- while the media can intrude on rescue situations, their presence can be used to the advantage of the rescue.

These generalisations from the case studies are entirely reasonable. However, without standardised incident reporting of animal rescues, there is no evidence base to determine best practice or evaluate the effect of interventions such as training (Howlett & Turnbull 2009) and advancement in technological aids such as glides and slings (Fürst *et al.* 2008, Gimenez, Gimenez & May 2004). Neither are statistics on death or injury to humans and animals during or post LAR required to be systematically collected. Both seem warranted.

Sadly, case study one provokes a clarification of the definition of 'successful rescue'. The gelding was successfully rescued but the inefficient process led to animal euthanasia, risk exposure to the rescue team, and loss to the owner. Even if a horse seems to survive a rescue with no obvious external problems, a veterinarian should monitor the horse post-rescue as collapse or death can occur some days later (Riley 2012). With this in mind, metrics of animal rescues should distinguish between survival of the animal (or human) at the time of extrication from danger as well as recovery from the event. This necessarily provokes an important ethical debate: when to rescue and when to euthanase *in situ* and recover the carcass for appropriate disposal.

Finally, post-traumatic stress disorder is a common after effect of emergencies, disasters and rescues (Neria, Nandi & Galea 2008). Responders, experienced in human rescues, can be shocked at how they are affected by animal rescues, especially when they go wrong (personal communication: Anthony Hatch). Similarly, veterinarians can encounter human injuries and fatalities at LAR scenes, and high stress levels are often experienced in emergency or disaster situations (Taylor *et al.* 2008). This risk should be flagged in training sessions, all rescuers should engage in post rescue debriefing, and affected responders should be encouraged to seek counselling.

References

Bedenice D 2007, *Evidence-based medicine in equine critical care. Veterinary Clinics of North America: Equine Practice*, 23, 293–316.

Farm Animal Welfare Committee 2012, *Opinion on Contingency Planning for Farm Animal Welfare in Disasters and Emergencies. London, UK: Department for Environment, Food and Rural Affairs.*

Fürst AE, Keller R, Kummer M, Manera C, von Salis B, Auer J. & Bettschart-Wolfensberger R 2008, *Evaluation of a new full-body animal rescue and transportation sling in horses: 181 horses (1998–2006). Journal of Veterinary Emergency and Critical Care*, 18, pp. 619–625.

Gimenez R, Gimenez T & May KA 2007, *Technical Large Animal Emergency Rescue, Iowa, United States, Iowa State University Press.*

Gimenez RM, Gimenez T & Stafford K 2004, *Implementation of the Equine Rescue Glide. Journal of Veterinary Emergency and Critical Care*, 14, pp. S1–S17.

Green J 2014, *What have we learned about animal rescue in the last decade? Fire Times. United Kingdom: modern media publications.*

Howlett M & Turnbull C 2009, *Large animal emergency rescue training, Australia, Agrifoods Skills Australia International Specialised Skills Institute.*

Leighton M & Staples M 2010, *Equine Emergency Rescue: a guide to Large Animal Rescue, Oxenford, Qld, Velvet Visions Press.*

Miranda-de la Lama GC, Sepulveda WS, Villarroel M & María GA 2011, *Livestock Vehicle Accidents in Spain: Causes, Consequences, and Effects on Animal Welfare. Journal of Applied Animal Welfare Science*, 14, pp. 109–123.

Neria Y, Nandi A & Galea S 2008, *Post-traumatic stress disorder following disasters: a systematic review. Psychological medicine*, 38, pp. 467–480.

Riley C 2012, *Emergency management of horses and food animals involved in disasters. Proc AVA NT Conference – Disaster Medicine and Management. Darwin, Australia.*

Rowden P, Steinhardt D & Sheehan M 2008, *Road crashes involving animals in Australia. Accident Analysis & Prevention*, 40, pp. 1865–1871.

Smith B, Thompson K & Taylor M 2015, *What's the big deal? Responder experiences of large animal rescue in australia. PLoS Curr*, 7(January 22). doi: 10.1371/currents.dis.71d34082943fa239dbfbf9597232c8a5.

Taylor MR, Agho KE, Stevens GJ & Raphael B 2008, *Factors influencing psychological distress during a disease epidemic: data from Australia's first outbreak of equine influenza. BMC public health*, 8, p. 347.

About the authors

Dr Kirrilly Thompson is a Senior Research Fellow at the Appleton Institute, the Adelaide campus of Central Queensland University. She is a trained anthropologist with research interests in human-animal relations and the cultural dimensions of risk.

MaryAnne Leighton is the Large Animal Rescue educator with Queensland Horse Council Inc. and author of *Equine Emergency Rescue- a guide to Large Animal Rescue*. MaryAnne has a lifetime of experience with horses and 20 years managing horse studs. For information on Large Animal Rescue in Australia see www.equineER.com

Professor Chris Riley is Professor of Equine Clinical Studies and Head of the Equine Group at Massey University, NZ. He has trained and taught veterinary students, veterinarians, and animal health workers in Australia, Canada, Haiti, New Zealand, Peru, Thailand and the United States. He has parallel research interests in animal and human welfare, their interdependence, and how veterinarians may use their skills and experience to benefit both.

When humans and other animals connect: disaster narratives of fear, hope and change

Dian Fowles, Flinders University, is investigating the impact of natural disasters on human–animal relationships.

This article contains some early, indicative results from an ongoing PhD project. To date, 25 in-depth interviews have been conducted exploring the impacts of disaster events on participants' relationships with other animals: 12 discussing their experiences with their companion animals and seven discussing their involvement in animal rescue or the provision of animal related services [to animals and/or their humans] during or after a disaster event. Participants were recruited from four different Australian states, collectively leading to a recounting of experiences from five different natural disaster events.

The current discussion arises out of a preliminary data analysis and reflects certain theoretical underpinnings which will inform the final thesis report. Pragmatic concerns are, without doubt, essential when formulating approaches for the protection and management of animals in disaster events. However, recognition of underlying ideologies about the valuing of animals in human societies and how these ultimately direct actions and policies must also be considered central. Taking a more holistic approach, where philosophical as well as pragmatic perspectives are considered together, will guide management strategies toward the most effective outcomes.

A deep heritage of culturally imposed values regarding humanity's place in the natural world (DeMello 2012) has resulted in the entrenched notion of a human/nature divide. This shapes our social structures and thus, in turn, the laws and policies which specify how we accommodate animals in times of disaster. This perceived division is manifest in inconsistencies in law and policy. Domesticated animals (and in certain circumstances, non-domesticated) are still considered as possessions by law (White 2012) and will continue to be deemed of secondary importance while this persists. In disaster situations, this can ultimately lead to what can be considered the *animals-in-disaster (AID) paradox*. Non-evacuated animals suffering from injuries may have to wait several days before they can be assessed and treated (or euthanized if called for). Subjecting animals to such suffering would, in non-disaster times, amount to animal cruelty, punishable under animal welfare law. At a time when animals are most vulnerable to their physical environment they are also most vulnerable to the dictates of the society in which they are confined.

Some participants, mindful of official safety restrictions, report their distress at their lack of ability to be able to access their animals and tend to them. Others report of their denial and defying of such restrictions.

Speaking with people whose relationships with their animals have been disrupted by disaster makes certain issues clear. For some, the experience confirms the already understood importance of the relationship. For others, it can have a profoundly transformative impact on this relationship: awakening them to its strength and, in some cases, how poorly prepared they were to cater for their animals at such a time. Interviews have consistently demonstrated deep emotions despite the passage of time and have, in some cases, drawn attention to the impacts of irregularities and inconsistencies in approaches to formal evacuation strategies.

The importance of animals to societies generally, and to individuals in particular, is best served by a sharing of responsibilities: not solely left to individuals nor the domain of organisations. Distress and grief beset individuals, and ultimately social groups (Bento 1994), when their relationships with their animals are affected during disasters. When animals are left behind or not adequately catered for damage is done to both humans and non-humans. Ideally, in time, a paradigm shift will emerge in which specific actions to include and accommodate animal safety and protection or evacuation from disaster areas will ensure animals' lives are as highly prioritised as those of humans (and the elimination of the AID paradox).

References

- Bento RF 1994, *When the show must go on: Disenfranchised grief in organizations*. *Journal of Managerial Psychology* 9(6): pp. 35-44.
- DeMello M 2012, *Animals and society: an introduction to human-animal studies*, Columbia University Press.
- White S 2012, *Companion Animals, Natural Disasters and the Law: An Australian Perspective*. *Animals* 2(3): pp. 380-394.

REPORT: Animal attachment and disaster resilience in vulnerable communities

By Jacqueline Mills, World Animal Protection

In 2013, World Animal Protection commissioned the first report into the ways in which animal attachment could be used to increase the disaster resilience of vulnerable communities in Australia (Thompson *et al.* 2014a). This addressed a call in the *National Strategy for Disaster Resilience* for greater emphasis on community engagement and a better understanding of the diversity, needs, strengths and vulnerabilities within communities (Councils of Australian Governments 2011).

The report was prompted by an emerging body of evidence demonstrating that the bond between humans and their animals can influence human behaviour in disasters. This can be both a risk and an asset: people can put themselves at risk to save animals in disasters, but conversely, people can be encouraged to plan for animals ahead of disasters. The latter scenario can aid resilience by encouraging people to take steps to secure their own safety as well as that of their animals ahead of disasters.

The report investigated the potential of drawing on the human-animal bond to encourage disaster preparedness among vulnerable groups of people for whom traditional community engagement strategies may have met with limited success to date.

To determine the ways in which animal attachment could be leveraged to increase the disaster resilience of vulnerable groups, the researchers needed to understand what makes these groups vulnerable and how animals figure in their lives.

To address this, a team of academic experts searched English language academic and lay literature from October to December 2013. They conducted a review of the literature in relation to seven vulnerable groups identified in the then Standing Council on Police and Emergency Management forward work plan on disaster resilience. These groups were Indigenous Australians, culturally and linguistically diverse communities (CALD), children and youth, older people, people with disabilities, the homeless, and people with mental health issues (*Communiqué* 4–5 July 2013).

Attachment theory was used to conceptualise the importance of the human-animal bond. This theory assumes that individuals seek proximity to an “attachment figure” (Bowlby 1999 in Thompson *et al.* 2014b). There are four criteria an attachment figure is thought to fulfil:

1. ‘proximity maintenance: the attachment figure is sought out and available in times of need.
2. safe haven: the attachment figure offers protection and support to relieve distress.

3. secure base: the attachment figure acts as a reliable presence that facilitates and permits risk-taking and exploration.
4. separation distress: prompted by separation from or actual loss of the attachment figure.’ (Mikulincer & Shaver 2007 in Thompson *et al.* 2014a: p. 217)

Attachment theory was found to be relevant for investigation of the human-animal bond for vulnerable groups, with the role of animals in people’s lives ranging from provision of companionship and security, to warmth, and practical service in the case of seeing-eye dogs. Despite the researchers finding that there was a sound evidence base recognising the psychological, emotional, health, wellbeing and practical benefits that animals provide to the vulnerable, they found there had been no systematic investigation to date of the impact of animals on the disaster resilience of those in the community who have been identified as vulnerable.

In disaster situations where there is a risk of losing the attachment figure, attachment strategies come into play. Where the figure is an animal such as a pet, the person will seek to reinforce the above criteria by, for example, seeking to be close to the animal or refusing to abandon an animal even in the face of danger to the person. In disaster situations, this might mean that ‘people may be reluctant to evacuate without their animals’ or they may ‘decline emergency accommodation if their animal is unwelcome’ (Thompson *et al.* 2014a).

The literature also demonstrated that animal attachment is critical during disaster recovery. If animals are lost this can negatively impact recovery and result in significant trauma and stress. A strong relationship with an animal following a disaster can aid recovery.

Based on these findings, the report made 25 recommendations for government, emergency services, and animal owners.

The main recommendations for government to consider included:

- Reading, referring to, and endorsing the *National Planning Principles for Animals in Disasters* established by the interim National Advisory Committee for Animals in Emergencies.
- Integrating consideration for animals into disaster planning at all levels of government, as per the *National Planning Principles for Animals in Disasters*.
- Establishing a co-ordinated, whole-of-government national approach to integrate animals into emergency planning (consistent with the *National Strategy for Disaster Resilience*).

- Consulting with vulnerable groups in the development of policy and procedure in relation to animals in disasters in line with the National Strategy for Disaster Resilience Community Engagement Framework.

Additional recommendations for government to consider included:

- Reading and reviewing the 'Recommendations to enhance companion animal emergency management in New Zealand' to identify relevance for the Australian context.
- Including pets and animals explicitly in definitions of assets and livelihoods that require protection, for example, alongside 'homes and possessions, cultural heritage and economic capital' within the *National Strategy for Disaster Resilience*. This recommendation is consistent with the 'need to obtain more consistent information ... beyond examination of life and property and simple economic assessments to cover the full scope of the social, built, economic and natural environments' outlined in the strategy.
- Including 'having an animal that an owner could risk their life to save' as an additional factor 'when considering a person's personal or community support networks' within the Victorian Vulnerable Persons Register.
- Requiring more specific information about pets on vulnerable persons registers (how many, what kind, dangerous etc.) in the free text box.
- Promoting a culture of mutual assistance whereby responders and community strive to help one another. That is, community can assist responders by taking all the necessary precautions to avoid the need for evacuation, or to facilitate evacuation with their pets and animals. Responders can assist the community by respecting their desire to save animals.

Recommendations for animal owners to consider included:

- Be informed that they are ultimately responsible for their animals in disasters.
- Be encouraged to include animals in their emergency plans.
- Assist responders by taking all the necessary precautions to avoid the need for evacuation, or to facilitate evacuation with their pets and animals.
- Ensure that their animals can be safely handled by strangers.
- Maintain a high standard of health care for their animals to minimise biosecurity concerns in shelters.
- Be educated about the roles and responsibilities of councils, government and responders.
- Be educated about the best means for preparing their animals for evacuation or on-site shelter.

Recommendations for emergency services personnel to consider training in:

- The human-animal bond and animal attachment.
- Interacting with vulnerable people during times of stress such as disasters.

- Ways to effectively evacuate vulnerable people with their animals.
- Ways to reasonably avoid having to leave animals behind.
- Ways to effectively evacuate vulnerable people when animals may need to be left behind.

Recommendations for disaster resilience information and engagement strategies:

- Information and engagement strategies could be embedded within animal-related media, information and communication, and as a basic unit of courses, training and information on animal care, as is consistent with the priority outcome that 'risk reduction knowledge is included in relevant education and training programs...' within the *National Strategy for Disaster Resilience*.
- Use pet-related social networks (vets, clubs, dog parks) etc. as a means of communicating disaster information, as the use of existing community networks and structures to prepare for and respond to disasters is one characteristic of a resilient community.
- Not be reliant on written information alone, and be translated into common languages spoken by culturally and linguistically diverse populations, as well as the various languages of Indigenous Australians.

Recommendations for evacuation shelters to consider:

- Integrating consideration for animals in their plans and practice.

The report concluded that a focus on animals and animal attachment is a unique approach that may be successful in increasing the engagement of vulnerable groups in disaster resilience community strategies. Further, because animal lives are interwoven with human lives, the benefits of increasing the resilience of vulnerable communities through animal attachment is twofold: 'human and animal lives can be saved together' (Thompson *et al.* 2014a).

The report, *Animal attachment and disaster resilience in vulnerable communities in Australia/A literature review*, can be obtained from World Animal Protection.

References

- Bowlby 1999, *Attachment: Attachment and loss, 2nd edition*, Basic Books, New York, NY, USA
- Councils of Australian Governments 2011, *National Strategy for Disaster Resilience*.
- Mikulincer & Shaver 2007, *The attachment behavioural system: Basic concepts and principles*, in *Attachment in Adulthood: Structure, Dynamics and Change*, The Guilford Press, New York, NY, USA, pp. 3-28.
- Standing Council on Police and Emergency Management 2013, *Communiqué 4-5 July 2013*.
- Thompson K, Every D, Rainbird S, Cornell V, Smith B & Trigg J 2014a, *Animal attachment and disaster resilience in vulnerable communities in Australia / A literature review*, prepared for World Animal Protection.
- Thompson K, Every D, Rainbird S, Cornell V, Smith B & Trigg J 2014b, *No pet or their person left behind: Increasing the disaster resilience of vulnerable groups through animal attachment, activities and networks*, *Animals*, 4, pp. 214-240.

People and their animals in emergencies: snapshots from past emergency events

By Dr Rachel Westcott, Coordinator, South Australian Veterinary Emergency Management (SAVEM) Inc.

ABSTRACT

People attach emotionally to animals. This is particularly demonstrated at times of stress, with natural hazard emergency events such as bushfires and floods being peak stress times. As a descriptive review, this paper considers visual and written evidence from past prominent emergencies that records interaction between people and animals. From these key examples some recurring common themes emerge.

Introduction

This paper describes the influence animals can have on human behaviour in emergencies. Emergency services organisations use a mandated and consistent hierarchy on which to prioritise and focus their core business – people, property, and the environment. Yet, in each of these categories, animals can be found.

People: The assistance an animal accompanying an evacuee (without which the evacuee may be unable to function in the community) needs to be considered as an inseparable extension of the hazard-impacted person requiring rescue. This category calls for extra consideration by rescuers and at an evacuation centre for provisions beyond the norm.

Property: Livestock are owned by primary producers, companion animals are owned by families and individuals. Horses and racing greyhounds might be variously considered as stock, as an economic unit, or as family pets. All these bring physical and emotional parameters to ownership. The welfare of these animals is the responsibility of the owner, best dealt with by inclusion in the family or property survival plan before an event. However, emergency response invariably includes rescue, either aligned with the welfare of families or for managing the hazards of animals wandering at large.

Environment: These may be animals such as wildlife, or animals wandering-at-large that have been separated from their owners. They may become a collision hazard for emergency services vehicles. Where iconic local species are held in protective high regard by a

community, carefully nurtured community resilience can be severely diminished if such animals are adversely affected by the event. Then there are those family animals that may be left behind, as last-minute human evacuees flee for their lives: the guinea pig, the dog or the pony left to suffer their own fates.

Records

Information for this paper exploring how people relate to animals in emergencies is drawn from a wide variety of naturally-occurring data. Historical accounts, reports from contemporary events, and, in particular, the photographic records detailing real-time emergencies represent a mix of literature and anecdotal sources that form a cohesive narrative.

Diverse emergencies

The events chosen are sequentially arranged as:

- The sinking of the *Titanic* (Transatlantic crossing 1912)
- *Hurricane Katrina* (south-eastern United States 2005)
- Grantham floods (Queensland 2011)
- 2009 Black Saturday bushfires (Victoria)
- 2014 Billiatt bushfire (South Australia).

These have been selected as providing a diverse baseline over an extended period of time and include the following recurring themes.

Constant themes

- Depth of commitment by people to animals.
- Risk-taking behaviour adverse to personal survival.
- Images of animals in an emergency as a less confronting representation of the event.
- The recent emergence of an iconic animal image as the event 'mascot'.

In emergencies, people may act, as they see it, in the best interest of an animal. Consequently, decisions may be taken that are adverse to their own personal safety and survival. The public record uses images and

references to specific animals as a method to engage society on the effects of emergencies on communities.

Most people dislike the thought of an animal dying a frightening, painful and possibly prolonged death, but an animal image may be less confronting and more broadly acceptable to society, instead of images of devastation and human tragedy. While images of people caught up in the worst effects of an emergency event are broadcast on the nightly news, these are rarely repeated with the frequency of those of the animal 'mascot'. The sub-text is the idea suggested by the extrapolation from animal to human victim. What happens to the animal could happen to the human. Thus, such images have been used in the hope that people will be motivated to engage in good preparedness measures for their own household, whether they own animals or not.

RMS Titanic

Just over a century ago, the transatlantic liner, RMS *Titanic*, sank on her maiden voyage after colliding with an iceberg. The records of rescue vessels detailed the observations in the aftermath. Beyond the expected rats and mice, the ship also carried animals as cargo (e.g. breeding dogs and poultry on export to the United States), as deliberate additions to the crew (the galley's cat and her kittens) or as a complement of companion animals belonging to some of the guests on board - principally cats and dogs - some being housed in the first-class cabins.

Some of the evacuees decided to either smuggle their pet onto a life boat hidden in clothing or to refuse to board a lifeboat unless the dog came too. In one case, where the dog was refused lifeboat passage, rescue crews several days later found the bodies of owner and dog still clinging to one another (Eaton 1999, Geogiou 2000).

Hurricane Katrina

In 2005 *Hurricane Katrina* breached the levees surrounding the low-lying portion of urban New Orleans. Enormous numbers of evacuees (both human and animal) needed rescue, relocation and support. Conservative estimates of animal deaths due to *Hurricane Katrina* are in the thousands (Rizzuto & Maloney 2008, Irvine 2007). The Humane Society of the United States and the Louisiana Society for the Prevention of Cruelty to Animals estimate 727 500 animals were affected by *Katrina* (Irvine 2007).

Stranded or abandoned animals in the emergency affected area were shot by armed responders, the official decreed policy at the time. Animal owners with no choice but to leave their beloved pets painted notices on their homes about the animals within, pleading for them to be left alive. Over 15 000 animals, including livestock and horses were rescued, although only about 2 300 were reunited with owners (Bryant 2006, Scott 2006).



Animal owners painted notices on their homes about the animals within, pleading for them to be left alive.

A number of barriers to evacuation were experienced, including the exclusion of companion animals from evacuation centres (Irvine 2007, Rizzuto & Maloney 2008). This had effects beyond the displacement of evacuees from their own animals: therapy animals normally used in social programs at evacuation centres as part of outreach to evacuees could initially not enter. When arrangements were later made for that access, entry was slow because officials themselves wanted to stop and pat the animals as a means of personal emotional relief (Chandler 2012). Laughing groups of children followed the animals and the atmosphere changed from dour and unresponsive evacuees to one of noticeably positive engagement, triggered by the presence of the animals (Chandler 2012).

The powerful story of 'Katrina' the beagle describes the 13-hour rescue mission of an American air force helicopter crew deployed to New Orleans during the infamous storm. In that 13 hours, 184 people, six dogs and two cats were winched to safety, including, at the very end, a beagle who had been present for the whole day. The small dog appeared to herd people towards the helicopter and the crew enjoyed seeing her intrepid behaviour beneath the rotor wash. 'Katrina' became the mascot of the 920th Rescue Wing at Patrick Air Force base in Florida and is the star attraction at fundraising events for local animal shelters. She has buoyed the spirits of many military personnel at the Patrick base, including those returning from traumatic service in Afghanistan (Kime 2013).



An American air force helicopter crew rescues 184 people, six dogs and two cats, including 'Katrina' the beagle.

Grantham

An Australian parallel to the New Orleans experience occurred in the Queensland floods of January 2011, including the efforts of Emergency Management Queensland's Rescue 500 helicopter. They record one pet, a kitten, jumping and clinging onto the person being winched into the helicopter from the flood-bound rooftop below. With a 'no pets' rule, the crew only discovered the stowaway when back on solid ground (Coulthard 2011, Woodward 2011).

Other images from these floods include horses attempting to clamber onto roofs, and the injuries they received from sharp roofing iron and guttering. The photographs also show the efforts by people to rescue these animals.

Victorian bushfires

The 2009 bushfires in Victoria left devastation in terms of whole communities, families, properties and the environment. All species of animals were inevitably affected. The resonating visual image from this event was 'Sam the Koala', photographed with a Country Fire Authority volunteer. This is the genesis of an animal image coming to represent an individual emergency event.

Billiatt Conservation Park bushfire, South Australia

This 2014 bushfire impacted on the local population of iconic white kangaroos. The local community values this mob as an identifier of the area. Efforts by locals working in collaboration with Department of Environment, Water and Natural Resources officers and with external support acted to ensure survival of the white kangaroos in the recovery phase after the fire (Vigar 2014).

Poster animals

The final theme is that of the iconic animal representing an individual emergency event, sometimes with a human attached, sometimes not. *Hurricane Katrina* included the tale of 'Snowball', a fluffy white dog confiscated from the arms of a screaming child by a police officer as the child boarded an evacuation bus. The child screamed until he vomited, and Snowball was never seen again (Irvine 2007).

'Sam the Koala' was the image of the Victorian 2009 bushfires that captivated the world, and helped raise donations for the Country Fire Authority. In 2010, the Deepwater Horizon oil spill in the Gulf of Mexico became identified by the oiled Pelican.

Animal as mascot

The image of an animal 'mascot' representing individual emergencies has been seen elsewhere, such as 'Cinder the bear' in the 2014 Carlton Complex Fire in Washington State. These images convey a sense of compassionate response by all affected. Sometimes the reality is that these iconic animals are not long-term survivors due to pre-existing medical conditions, which may be exacerbated by superimposed physiological stress.

Images of overwhelming human tragedy in emergencies are considered inappropriate and inhumane, and are not acceptable to be displayed regularly in the mass media. Animals in this context represent a 'buffer' - the image of the animal is less traumatic, possibly even conveying a message of hope.

What we learn

This paper examines decisions by people in emergencies with respect to the welfare of animals. Written and photographic evidence in this historical review illustrates the propositions in this paper.



White kangaroos are iconic for the Billiatt Conservation Park, South Australia.

There are a number of consistent reminders that:

- animals are a factor in decision making in emergency situations
- failing to accommodate animals in emergency response can have direct impact on decisions by people to evacuate in timely ways
- human-animal relationships are not only relevant to the individual animal owner and their companion animal, but equally influence and impact community and society generally. How these relationships are managed affects resilience, how communities achieve 'post-traumatic growth' (Tedeshi 2004) and how society as a whole responds.

References

- Bryant S 2006, *No way would we put them down: Animals still homeless after Katrina*. *Houston Chronicle*, April 22.
- Chandler CK 2012, *Animal assisted therapy in counselling*, New York, New York: Routledge.
- Coulthard R 2011, *Rescue 500*. *Sunday Night*. Channel 7.
- Eaton JP & Haas CA 1999, *Titanic: A Journey Through Time*, Sparkford, Somerset, Patrick Stephens.
- Geogiou I 2000, *The Animals on board the Titanic*. *Atlantic Daily Bulletin*. Southampton: British Titanic Society.

Irvine L 2007, *Ready or Not: Evacuating an Animal Shelter During a Mock Emergency*. *Anthrozoos*, 20, pp. 355-364.

Kime P 2013, *Saved from Katrina, beagle retires to Florida as rescue wing mascot*. *Military Times*. Springfield: Gannett.

Rizzuto TE & Maloney LK 2008, *Organizing chaos: Crisis management in the wake of Hurricane Katrina*. *Professional Psychology: Research and Practice*, 39, pp. 77-85.

Scott RT 2006, *Get animals out of town, too, bill suggests: Legislation would provide a place for pets during an evacuation*. *Times-Picayune*, April 18. Tedeshi RG & Calhoun LG 2004, *Posttraumatic Growth: Conceptual Foundation and Empirical Evidence*. Philadelphia, Lawrence Erlbaum Associates.

Vigar S 1 February 2014, *RE: The Billiat White Kangaroos*. *Personal communication*.

Woodward J 2011, *Mark Kempton, Senior helicopter pilot*. In: *State Library of Queensland (ed.)*.

About the author

Dr Rachel Westcott is Director and Principal Veterinarian, HomeCare Vet to Pet Mobile Veterinary Services in Adelaide, South Australia, and Coordinator of South Australian Veterinary Emergency Management (SAVEM Inc.). She is concurrently a PhD candidate on the University of Western Sydney and Bushfire and Natural Hazards CRC project, 'Managing Animals in Disasters: improving preparedness, response, and resilience through individual and organisational collaboration'.

National Planning Principles for Animals in Disasters

World Animal Protection has been working to assist animals and communities in disasters for the past 50 years. Over this time, they have built significant expertise across the disaster cycle from preparedness to mitigation to response to recovery.

In Australia, the organisation works with a wide range of stakeholders to integrate considerations of animals into disaster policy and planning. The focus is on building disaster resilience to the benefit of everyone.

The organisation has held three annual workshops on the topic in partnership with the Department of Agriculture's *Australian Animal Welfare Strategy*. Following the 2012 'Building Resilience: Animals and Communities Coping in Emergencies' workshop, the National Advisory Committee for Animals in Emergencies was established as an interim committee with the aim of taking a collaborative and proactive approach to the integration of animals into disaster management planning across all jurisdictions and communities.

The committee developed the *National Planning Principles for Animals in Disasters*, which was designed as a non-prescriptive tool to support jurisdictions

as they improve disaster management planning by ensuring that animals are considered. The *National Planning Principles for Animals in Disasters* have been endorsed by the Australia-New Zealand Emergency Management Committee. This follows earlier endorsement by animal welfare authorities through the Animal Welfare Committee. Such high-level endorsement demonstrates national, cross-departmental commitment to best practice with respect to animals in disasters planning.

The *National Planning Principles for Animals in Disasters*¹ are available to emergency services agencies, State Disaster Co-ordination Groups, and other parties for reference as they review emergency management plans and policies, as well as operational procedures.

1 *National Planning Principles for Animals in Disaster*: At: www.ava.com.au/sites/default/files/AVA_website/FINAL%20National%20Planning%20Principles%20for%20Animals%20in%20Disasters.pdf

EM Online: Do you have a plan to protect your pet when disaster strikes?

protectyourpet.org.au – A new resource is encouraging the public to be prepared, act early and stay safe.

Australia is a nation of pet lovers: 63% of households have at least one pet. Pet owners consider their animals as part of the family.

But are people ready to protect their pets when disaster strikes?

We know that bushfires, storms, floods, tropical cyclones and hot weather are a reality of living in Australia. These disasters can occur at any time.

Without a disaster plan for their pets, people can make panicked decisions during disasters that threaten the safety of animals and humans alike.

The Protect your pet site allows the public to download Disaster Packs with important information to keep pets safe, including a checklist to prepare a disaster survival kit for pets.



Australian Government
Attorney-General's Department
Emergency Management Australia



Australian Emergency Management Knowledge Hub

THE AUSTRALIAN EMERGENCY MANAGEMENT KNOWLEDGE HUB

This innovative new online resource, developed by Emergency Management Australia, through the Australian Emergency Management Institute, provides emergency management practitioners, researchers, educators, policy makers and the general public access to:

- a research clearing house
- an historical disaster event database
- a case study library
- a multimedia library
- cross-sectoral discussion forums
- new media collaboration tools
- blogs.



The Knowledge Hub is a virtual and an actual knowledge environment and includes access to resources in the Australian Emergency Management Library. The Knowledge Hub provides ready access to evidence-based research leading to:

- enhanced decision making
- improved policy development
- a cycle of continuous improvement for the emergency management sector.

The Knowledge Hub is continually updated and informed by feedback, resources and ideas from users.



Visit: www.emknowledge.gov.au

Contact: emknowledge@ag.gov.au

Join: @AEMKH

BUILDING A DISASTER RESILIENT AUSTRALIA



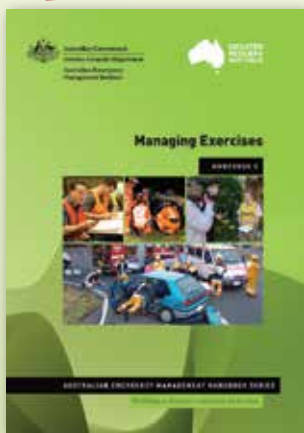
GET READY



Australian Government
Attorney-General's Department
Emergency Management Australia

Australian Emergency Management Handbooks

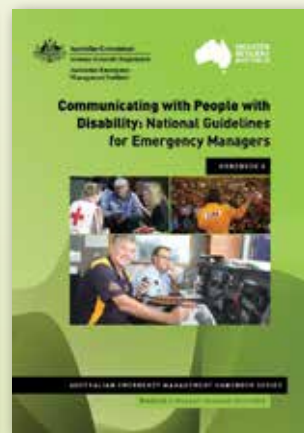
CURRENT RELEASES



HANDBOOK 3
Managing Exercises



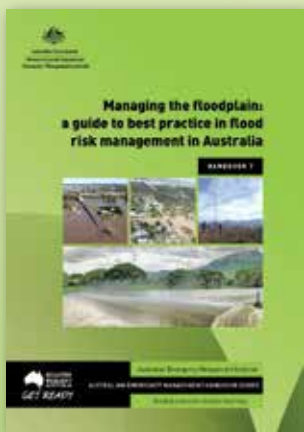
HANDBOOK 4
Evacuation Planning



HANDBOOK 5
Communicating with People with Disability



HANDBOOK 6
Community Engagement Framework



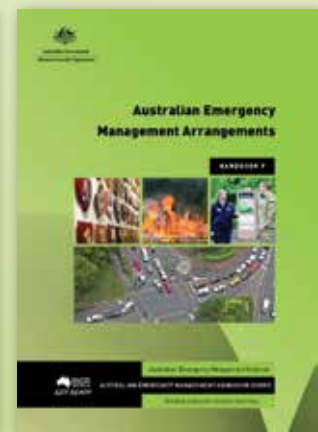
HANDBOOK 7
Managing the Floodplain



HANDBOOK 8
Lessons Management English version



HANDBOOK 8
Lessons Management Arabic version



HANDBOOK 9
Australian Emergency Management Arrangements



Download free eBook or order your own hardcopy via our new print-on-demand service at: www.em.gov.au/publications

Building a disaster resilient Australia