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## International Journal of Disaster Risk Reduction

journal homepage: [www.elsevier.com/locate/ijdrr](http://www.elsevier.com/locate/ijdrr)

## Planned and ultimate actions of horse owners facing a bushfire threat: Implications for natural disaster preparedness and survivability

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### ARTICLE INFO

#### Keywords:

Horses  
Natural hazards  
Emergency  
Risk factors  
Preparedness  
Response and recovery  
Evacuation

### ABSTRACT

During disasters, the presence of companion animals is an identified risk for household relocation failure as well as premature return. In Australia, where bushfires are a regular summer threat, householders are encouraged to develop a written bushfire action plan that includes pets and animals. As part of this plan, householders are recommended to relocate themselves and their animals at least the day before a forecast catastrophic fire day. This advice is particularly relevant for horse owners, as the challenges and risks associated with evacuating horses are arguably much more complex than those for smaller companion animals. However, there is little empirical research on the plans and responses of horse owners to bushfire threat. In this paper, we present qualitative findings of semi-structured interviews with 21 households threatened by one of three significant fire events in South Australia in January 2014, all of which were responsible for a horse or pony. We describe and discuss nine different scenarios organised around intended and ultimate action. We found no apparent patterns between intentions and actions for pre-emptive relocation of horses. The extended explanations presented for each scenario provide important insight into equestrian cultures, especially in relation to plans, pre-emptive relocation, behaviour change, and 'the horse community' in Australia. We question whether the pre-emptive relocation of horses is over-emphasised for bushfires, and ask if scenario-based planning with contingencies might be more useful and realistic.

### 1. Introduction

Each year around the globe, natural disasters pose threats to the lives of humans and animals. In Australia, bushfires (or wildfires) are particularly common. On days of anticipated and publicised high bushfire activity, the decision to 'evacuate early' or 'prepare, stay and defend' can be a critical life safety decision for many people [1]. Leaving early is often considered the safest option for communities in areas of high fire danger on days of 'catastrophic' fire danger [1,2]. However, there is inconsistent planning, preparation and adherence to the responses of 'staying and defending' or 'leaving early' throughout the general Australian population [3,4]. Not all residents share the same perception of risk towards fire threats [5], and planned actions are not always possible, for reasons including the unpredictability of bushfires or animal ownership [1]. The impacts of pet ownership on failure to evacuate from a disaster, as well as the premature return to the property, have been well documented [6,7]. Some of the reasons for unsuccessful evacuation with dogs and cats have been practical, such as a lack of sufficient animal carriers or leashes [7]. Attachment to animals is often used to explain why people refuse to leave without their pets, or

enter hazardous areas to evacuate (or rescue) them [7], although, the degree of animal attachment has not been found to be a reliable predictor of evacuation [8].

Most of the research on the impact of animals on human responses to natural disasters has focussed on the small animals that are most readily identified as pets, such as dogs and cats [6,7,9,10]. Yet there are other larger animals with whom humans develop high levels of attachment, but who rarely share the same domestic spaces as humans. Larger animals pose different challenges than small animals as they are much more dangerous to manage, and require specialised handling skills and equipment to transport [11]. These are usually horses but other large companion animals include sheep, pigs, goats, alpacas and llamas. A survey of 606 participants living in regional South Australia, for example, found that 74% of households owned pets, of which 12% were responsible for horses or ponies and 7% for alpacas [12]. Not only is evacuating from a fire threat with a horse vastly different compared to a dog or a cat, some households may be trying to evacuate both small and large companion animals – and not necessarily from the same property. One survey of horse owners in Australia, for example, found 'the average numbers of [other] animals owned were two dogs, two

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<https://doi.org/10.1016/j.ijdrr.2017.11.013>

Received 5 September 2017; Received in revised form 13 November 2017; Accepted 19 November 2017  
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cats, eight birds, two reptiles, 188 sheep, 27 goats or 45 ‘other’ animals [13]. Horses may not be evacuated when they are kept with livestock, as surveys of livestock owners have found them most likely to ‘stay and defend’ for various reasons [14].

As horse owners often report feelings of attachment comparable to those reported by owners of more ‘traditional’ companion animals like dogs or cats [11,15], they may be motivated to risk their lives to save their horses. In fact, horse owners have been singled out by emergency responders as particularly challenging to manage. This was thought to be not only because horse owners have a strong emotional bond with their horses, but more pragmatically, because of the challenges associated with evacuating horses [16]. Weighing in at around half a tonne of sentient, decision-making animal, there are many practical challenges to consider when evacuating horses from the threat of a natural disaster.

Horses have a reputation for being unpredictable [17]. Having evolved on open plains as herd animals, horses are notorious claustrophobes. Even when being transported under non-urgent conditions, horses can be difficult to load, and then may cause injury to themselves and others [18]. During evacuations from emergencies such as bushfires, owners may need to choose which of their horses to try to save first, if at all [19]. But not all horse owners have access to transportation. Horse-specific transport needs to be accessible and in working order. Most standard horse transport vehicles accommodate two horses, yet a large percentage of horse owners in Australia own multiple horses. A survey of 930 horse owners in Australia found that 89% of horse owners owned more than two or more horses [20]. This means that some horse owners may have to prioritise evacuating some horses over others [19], or attempt multiple relocations. These may not be from the same property or threat. Livestock producers may need to make similar decisions. Following volcanic eruptions, for example, ‘it is more likely and feasible that a small, limited evacuation of livestock of high genetic value and diversity could be undertaken from a farm facing an imminent ashfall’ [21].

In comparison to small companion animals such as cats and dogs, horses tend to be kept in same peri-urban and rural areas where the threat of bushfire and prevalence of animal ownership is higher than for metropolitan households [12]. When horses are kept on other people’s properties (known as ‘agistment’ in Australia or ‘livery’ in the UK), owners may travel into threatened areas to defend, evacuate or check on horses. For example, hundreds of horse owners travelled to threatened horse agistment properties during the 2003 firestorm in Canberra [22], but hardly any agistment centres have suitable places of refuge or shelter.

Owner attempts to retrieve their horses may be fuelled by concerns that roadblocks will be established, and/or that property owners (who may have no horse-related expertise) will be the first people allowed to return early to properties in damaged areas. This increased traffic into an area of fire activity can exacerbate risks to owners, road users, responders and wild and domestic animals. All 11 agistees in one study went to their horses on the day of the fire [22]. It is worth noting that behaviours and concerns can vary according to the type of disaster. In the case of biological disasters like the 2001 Foot and Mouth Disease outbreak in the UK for example, the whole countryside shut down, preventing people from entering or leaving [23].

Disaster planning and preparedness is essential to reducing equine fatality and injury from bushfires, as has been noted in relation to flooding [24]. Pre-emptive relocation of horses to pre-identified safer places can reduce the likelihood of dangerous ‘wait and see’ responses to bushfire threat, as well as the chance of high risk ‘last minute’ relocations, whilst also minimising the demand on emergency services and evacuation centres. Planning for pre-emptive relocation may also motivate higher levels of preparedness [25].

## 2. Horse owners and bushfire preparedness in Australia

In this paper, we are concerned specifically with the relocation behaviours and bushfire action planning of non-commercial horse owners. Other research has considered the risk of natural disasters to factory farms [26] and the logistics of moving large animals in commercial quantities following natural disasters with long-term impacts such as volcanoes, [21,27] and earthquakes, which can precipitate man-made disasters such as nuclear plant damage [28]. There are an estimated one million domestic (owned) horses in Australia [13], and 400,000 horse owners who represent nearly 2% of the Australian population [29]. In this preliminary study, we examine the intentions and ultimate actions of a small sample of horse/pony owners who were threatened by one of three significant bushfire events in South Australia in January 2014.

In South Australia, bushfire information is disseminated via the South Australian Country Fire Service (CFS), a local volunteer-based organisation. Each day, the Bureau of Meteorology also forecasts a fire danger rating, which ranges from: no fire danger rating, to low-moderate, high, very high, severe, extreme, and catastrophic. “The Fire Danger Rating is an indicator of how dangerous a bushfire could be if it did occur. It is not a predictor of how likely a bushfire is to occur” [30: n.p.]. During extreme ratings, residents are informed to “get ready to act”, and during catastrophic ratings, to “put their bushfire plan into action”, and if possible, to leave bushfire prone areas the night before or early in the day.

The CFS produce information tailored specifically for horse owners [31] and their community engagement team deliver ‘bushfire planning for horse owners’, workshops where participants are encouraged to:

- 1) Pre-emptively relocate horses when an extreme or catastrophic Fire Danger Rating is issued, after identifying several safe exit routes from the property and ensuring horses are appropriately trained for transport.
- 2) Identify a ‘safe area’ on the property if it is not possible to relocate; this should be as large as possible—ideally, a closely-grazed paddock with a dam—and horses should be prevented from entering public roads by securing property gates.
- 3) Communicate and visually display household bushfire plans, ensuring everyone who lives, works, and keeps horses on the property understands and is aware of the plan.
- 4) Jointly create a bushfire survival plan with the landholder if your horses are kept off-site [32].

Bushfire survival plans can take two forms: written and mental (unwritten). Whilst written plans are enthusiastically recommended by emergency services agencies, one review of post-incident household surveys found a national average of 5% of households with a written bushfire survival plan [33]. Moreover, studies of the evacuation intentions of companion animal owners have found a mismatch between plans and their execution [34], and written plans may have more risk reduction benefits to businesses than households [35]. More empirical data is required to determine if there is any increased chance of survival from having a plan, or evacuating early. Even if horses are successfully and quickly evacuated ‘at the last minute’, finding suitable alternative accommodation can be difficult and emergency accommodation can be fraught with concerns for biosecurity, space, resources, waste management, and physical risks to humans, horses, and other animals. Yet, little is known about how horse owners and guardians actually plan for or respond to actual bushfire threats as wide-scale natural disasters (distinct from barn and stable fires [19]).

The aims of the present study are: 1) to identify the scenarios for intended and actual pre-emptive relocation of horses, and 2) to infer implications for natural disaster preparedness and survivability from horse guardian experiences of these scenarios. This information is important for determining potential initiatives for increasing the bushfire

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