

Categorising animals and habitats in disaster-related activities

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Introduction

Among the many variations of defining ‘disaster’, a common baseline is typically a situation requiring external assistance (Perry & Quarantelli 2005, Quarantelli 1998, UNDRR 2020). An assumption in this definition is that people, society or human activities must be affected for a disaster to result. Animals and their habitats are part of society and it is important to consider animals and habitats as part of disaster-related activities. These activities cover pre-disaster actions such as mitigation, risk reduction, planning and preparation along with activities during and after disasters such as response, recovery and reconstruction.

Initiatives to incorporate animals and habitats within disaster-related activities are scattered at times, often focusing on one particular typology or classification defined by the discipline or purpose of the people involved. For instance, Darroch and Adamson’s (2016) ‘animal-inclusive disaster risk reduction’ focuses on companion animals. Furthermore, animals can be labelled as problematic in disasters or as inhibitors for disaster-related activities, rather than being regarded as advantageous or supportive factors (Thompson 2013). Ideas of naming, categorising and creating hierarchies for animals and habitats from human perspectives have also been critiqued (Borkfelt 2011, DeMello 2012, Irvine 2008).

These debates might or might not assist people and animals during a hazard when people are making life-and-death decisions, especially when disagreements across disciplines preclude clear-cut philosophical and conceptual pathways. Many viewpoints fustigate theories of categories or express disappointment at humans attempting hegemony over animals and habitats (Franklin 1999, Irvine 2008). A gap still exists in bringing together the multiple modes of animals and habitats within all disaster-related activities (cf. Arluke & Sanders 1996, DeMello 2012, Kumaravel *et al.* 2020). Operational decisions have differed for the presumed purposes of animals (e.g. Glassey, Rodriguez Ferrere & King 2020), even if accepting that the human-animal binary divide ought to be challenged (DeMello 2012, Irvine 2008).

Collecting the many practitioner aspects regarding animals and habitats in disaster-related activities assists in understanding and training for situations before, during and after disasters. Five non-exclusive categories of animals and habitats are used to allow for critical reflections on operational aspects of disasters.

Abstract

A disaster is typically defined as a situation requiring external assistance, under the (contestable) assumption that the situation must affect people and society to be a disaster. Animals and their habitats are part of society and humans connect with them, so animals and their habitats are part of all disaster-related activities. This straightforward statement has produced divergent theories, policies and practices including challenges to categories, labels and divisions for humans and non-humans. This paper collates many practitioner aspects regarding animals and habitats in disaster-related activities. It assists in understanding and training for situations involving non-humans before, during and after a disaster. Five categories, sometimes overlapping, are provided of (non-human) animals and their habitats affected by disaster-related activities: companion animals, service animals, livelihood animals, captive animals and wildlife and wildland animals. Other aspects emerge about animals and habitats contributing to disasters and to disaster-related activities. Some ethical and practical issues are discussed regarding rights for, responsibilities of and disaster definitions relevant to dealing with animals during disasters.

Categories of non-humans

1. Companion animals

Many people have animals for companionship, as in pets, which can be seen as being an integral part of the family and household (Irvine & Cilia 2017). Leaving these animals behind during evacuation might be construed as being animal abuse, yet many evacuation shelters are not equipped to deal with companion animals. People with animals can be turned away or feel forced to manage on their own because their companion animals cannot be let in or taken care of (Farmer, DeYoung & Wachtendorf 2017; Farmer & DeYoung 2019; Glassey 2020). Pets left behind in a disaster suffer, such as through increased stress (Nagasawa, Mogi & Kikusui 2012), and people whose companion animals are killed can experience impeded recovery (Travers, Degeling & Rock 2017). People evacuating without their pets might put themselves and others in danger by trying to return to recover their pet (Heath, Voeks & Glickman 2001).

Philosophical discussions exist related to owning animals for companionship and raise issues of speciesism and animal oppression (Irvine 2008). Irrespective, research on companion animals in disasters provides direct advice that can be enacted long before a disaster to address practicalities of evacuation and sheltering (Anderson & Anderson 2010, Glassey 2010, Onukem 2016, Taylor *et al.* 2015).

Some people have allergies to or phobias of some animals. Evacuation shelters should cater for these needs while recognising the needs of companion animals and their owners. For example, how might pest control in a shelter, such as insecticide or rat poison, affect pets? This question imposes a human-centric value judgement through the label ‘pest’ (Arluke & Sanders 1996) although laws in many jurisdictions protect people in public places from animals such as rats, fleas and cockroaches. Irrespective of human-centric labels such as ‘pests’ and ‘vermin’, it is neither straightforward nor consistent to judge whether or not a companion animal is likely to pose a danger to other people or animals. Where an animal has potential to harm or kill, such as pythons, poorly trained dogs and cats, and poisonous spiders, a balance is needed between serving pets and achieving safety for everyone. Animal handlers who are trained in emergency planning and preparedness could be deployed to disaster sites with manuals that assist their operations (Kumaravel *et al.* 2020).

Cleanliness and hygiene are important and include activities like keeping fish tanks and bird cages clean and providing appropriate space and sufficient cleaning for animal areas. There must be certainty that pets are clean and vaccinated and not bringing fleas, ticks or diseases into the shelter. Many dogs require regular exercise and some birds need to be kept in confined spaces. Owners must bring everything they need for their animal, such as leashes, muzzles, cages, food and water bowls and bedding. If animals are injured or become unwell, it would be ideal to have an on-site veterinarian with adequate facilities and equipment.

Many of these requirements such as hygiene, health care and potential for harm apply to all categories of animals.

2. Service animals

Novak and Day (2018) emphasise the importance of preparing specific information related to service animals and people, to be ready for when a disaster occurs. Many people with disability rely on animals and need to have the animals with them. For example, a guide dog supports its owner during a disaster (Anonymous 2015) as do hearing-ear dogs and seizure-alert dogs. Thus, disaster-related activities must account for this human-animal relationship. Service animals can also provide confidence and emotional support to people without disability, expanding the types and roles of animals involved. Legal (Bourland 2009) and moral (Irvine 2008, Irvine & Cilia 2017) discussions result. Emotional support animals can also help people to deal with disasters (Fine 2019).

Service animals offer more than providing functional needs to people with disability or emotional support. Parenti and co-authors (2015) provide a taxonomy of service animals that demonstrates the variety of tasks these animals undertake. Examples are search and rescue, apprehending suspected criminals, security and guarding, hunting, sports such as racing and showing, herding as well as the detection of explosives, drugs and food. Some of these roles overlap with companion animals. Some roles overlap with livelihood animals, such as when used for sports, hunting or herding.

3. Livelihood animals

Livelihood animals encompass livestock such as cattle, pigs, sheep and chickens as well as other animals used for working and jobs such as horses, mules, llamas and alpacas. Extensive overlap occurs with livestock and service animals and many of the categories used by Parenti and co-authors (2015) cover both service and livelihood animals. For example, guard dogs, herders, ploughing animals and detection animals provide services to their owners while also creating the owners’ livelihoods.

Improvements to evacuating and caring for large livelihood animals have occurred in response to fires (Squance *et al.* 2018; Thompson, Haigh & Smith 2018). Rescues of these animals from water and soft ground feature prominently in manuals and textbooks (Gimenez, Gimenez & May 2009; Heath 1999; Ray 2006). Drought is also a major concern in terms of providing water and food for livestock. Nomadism and pastoralism used to be common and provided a form of disaster risk reduction by moving herds large distances to find healthier pastures and water sources (e.g. Fleuret 1986, Rubert & Beetlestone 2014). These previously successful approaches of dealing with disasters have been undermined by imposed changes including:

- forced sedenterisation
- increased marketisation of herds
- fragmentation of habitats and partitioning of management regimes by international borders, roads, railways and settlements
- shifting infrastructure and land management
- counterproductive aid systems.

Such aspects have been shown for Mongolia (Sternberg & Batbuyan 2013) and Kenya (Bersaglio, Devlin & Yap 2020).

Key challenges with livelihood animals, especially livestock, are providing adequate food and water if the owners cannot reach the animals to provide care. This is exacerbated by the loss of livelihoods if animals die (Deen 2015 for the 2010 Pakistan floods, Glassey & Wilson 2011 for the 2010 New Zealand earthquake). Insurance is touted as one approach (Ye *et al.* 2017 for winter weather in China) but this means that the animals have already suffered and died. Successes have been achieved through short-term evacuation (Paul *et al.* 2010 for cyclones in Bangladesh) and long-term evacuation (Wilson *et al.* 2012 for a volcanic eruption in Chile). Setting livestock free in advance of an impending disaster is sometimes applied (Paul 2012 for a cyclone in Bangladesh). Re-entering a danger zone to care for animals, even while people live outside the zone, has been used as a way to maintain livestock-related livelihoods (Akabayashi & Yoshinori 2012 for a nuclear power plant disaster in Japan).

4. Captive animals

Animals are kept captive in many locations such as zoos, enclosed safaris (e.g. the African Lion Safari in Ontario, although these 'open zoos' overlap with the 'wildlife and wildland animals' category since safaris are undertaken in wildlands), aquaria, marine parks, pet stores and research facilities. Many site-specific operational procedures exist. Sawyer and Huertas (2018) provide general lessons for zoos dealing with disasters and Singh, Kaur and Gupta (2020) detail disaster-related issues for New Delhi's National Zoological Park.

Miller and Fowler (2012) provide disaster-related advice for what they term 'captive wildlife facility' workers and Irvine (2009) provides recommendations for 'animals in research facilities'. Most research facilities and shops typically adhere to building and jurisdiction disaster-related rules and regulations. This situation does not mean that the needs of animals have been fully considered especially in terms of disaster-related safety or welfare. For example, lockdown measures during the COVID-19 pandemic led to many research animals being killed because they could not be cared for and few contingency measures existed (Nowogrodzki 2020).

5. Wildlife and wildland animals

The delineation between 'wildlife' or 'wild animals' and animals in the other 4 categories cannot be strictly determined because animals retain instincts and behaviours irrespective of how 'domesticated' they appear. Not all 'wild animals' are necessarily wildlife and Garde, Acosta-Jamett and Bronsvort (2013) refer to 'free-roaming' dogs. Similarly, dogs and cats in cities such as Istanbul are unowned yet are part of the local neighbourhoods with varying levels of friendliness towards people. Human-wildlife interactions show many constructive examples rather than always being in conflict and 'conflict' is often a misnomer in this context (Peterson *et al.* 2010).

Could wildlife or nature be damaged by an environmental process or phenomenon? Extinctions, including mass extinctions, are part of nature and human beings would not exist without previous mass extinctions. However, extinctions depend on the environment. Could mass extinctions be labelled as disasters? Today, if an environmental process or phenomenon might make a species

extinct or destroy a unique habitat (e.g. fires started by lightning (Pickrell & Pennisi 2020)), would that be a 'disaster'?

Another facet is legal rights for non-human entities, such as primates (Wise 2014) and for rivers (Pecharrroman 2018). These rights include the right to protection. Thus, would primates, rivers and other non-human entities have a right to protection from disaster? Moral questions arise. An earthquake can lead to a landslide damming a river. Have the river's rights been infringed? Is this a disaster afflicting the river, entailing human action to breach the dam? Does it matter whether or not this situation occurs in locations where beavers build dams? If a river already has a natural dam and an earthquake breaches this dam, have the river's rights been infringed? Is the natural dam breaking a disaster and should human action be required to rebuild the dam?

The idea of nature as static is nonsense and environmental processes and phenomena should be accepted as typical, even if they are sometimes hazardous to human society. Who judges whether environmental changes are positive and could reduce disaster risk for the environment or if they are detrimental and could be a disaster for the environment?

If non-human entities have disaster-related rights, then do they have disaster-related responsibilities, duties and obligations, as humans do? How would entities with legal rights, such as primates and rivers, be forced to fulfil responsibilities, duties or obligations? What would be the punishment for failing to fulfil these duties? Disasters with respect to wildlife and wildland animals raise challenging ethical, legal and operational questions.

Critiquing reflections

Many other aspects of animals and habitats in disaster-related activities exist and have received attention, even if not being fully integrated into operational work. Animals and habitats are not only affected by disasters but can be a fundamental input into a disaster. Disaster risk, by definition, combines hazard and vulnerability with the hazard component sometimes coming from the environment. Wind, volcanic eruptions, floods, landslides and other environmental processes and phenomena are part of habitats. These physical, or non-living, processes are often labelled as 'natural hazards' or 'environmental hazards', even when people influence them substantially such as engineering rivers to alter or create floods (Criss & Shock 2001, Etkin 1999).

Part of the environment is also the biological, or living, components. Microorganisms represent the hazards for some of the deadliest disasters, such as epidemics and pandemics (Garrett 1994) and plants can be problematic, for example, casualties from falling coconuts (Barss 1984). Plants including crops must be considered within contexts of habitats and human-environment connections and interactions for disaster-related activities. For example, living entities can adversely affect crops and lead to famines (Devereux 1993). Large animals, as with microorganisms, can be hazardous and might be classified as 'natural hazards'. Kelman, Raut and Drake (2019) compiled material on animals attacking people, terming them 'macrobiological hazards' and Gaillard and colleagues (2019) placed human-animal interactions into a disaster risk reduction framing.

With the definition of ‘disasters’ frequently being situations requiring external assistance, animals and their habitats might be able to render external assistance. An example is search-and-rescue dogs (Jones, Downend & Otto 2004) within the service animals category. Macpherson and Roberts (2006) speculate that dogs might seek help in an emergency, blurring the line that a disaster must necessarily involve people or human society. Animals also realise loss (e.g. Bradshaw 2004 for elephants) meaning that wide-scale impacts on an animal group or their habitats could be a disaster for the animals.

Habitats can contribute to stopping disasters as in ‘ecosystem-based disaster risk reduction’ (which encompasses ecosystem-based climate change adaptation) and ‘nature-based solutions’ (Renaud, Sudmeier-Rieux & Estrella 2013). Using nature and the environment to avert disaster has been a mainstay of human activities for millennia (e.g. Bardsley, Prowse & Siegfriedt 2019 for bushfires in Australia). Thus, it is unclear why recent work emphasises human-nature connections through what is termed ‘ecosystem-based approaches’ and ‘nature-based approaches’, as if humanity and the environment are not connected. Much scholarship expresses concerns at assuming human hegemony over the environment and taking for granted human abilities to tailor nature for society’s purposes (Irvine 2008, Irvine & Cilia 2017). Separating out ‘ecosystem-based’ and ‘nature-based’ may be counterproductive to the long-term, baseline processes of disaster-related activities that integrate human and non-human elements.

To overcome the artificial separation of human and non-human elements in contemporary approaches also means querying why definitions of ‘disaster’ tend to focus on humans and human society (Perry & Quarantelli 2005, Quarantelli 1998, UNDRR 2020). Biodiversity, geodiversity and ecodiversity are prominent traits of the environment (Barthlott *et al.* 1999). Bringing these 3 traits into disaster-related activities examines whether or not they should be considered as non-human entities or characteristics of nature. To overcome the criticisms of the human/non-human dichotomies, such as through challenging the nature/culture divide (Descola 2013), instead, human beings and society should be enfolded within them. That is, biodiversity includes human beings, ecodiversity includes human-created habitats such as cities and geodiversity includes infrastructure. Consequently, the fields of ‘ecosystem-based disaster risk reduction’ and ‘nature-based solutions’ are obviated since, by definition, they incorporate human beings and societal constructions.

Descola (2013) suggests animism, totemism, naturalism and analogism as ontological categories appearing in different forms based in different belief systems. This provides further labels for exploring animals and habitats in disaster-related activities alongside the definition of ‘culture’ within the context of the definition of ‘disaster’ (e.g. Donovan 2010, Krüger *et al.* 2015). These belief systems and the authors challenging culture/nature, human/animal and other dichotomies can themselves be challenged. Belief systems exist that separate humans from (other) animals and which, for disaster-related activities, suggest that humans are more important than (other)

animals. These belief systems have dominated many operational recommendations for animals and habitats in disaster-related activities while indicating a preference for categorising. Examples are Descola’s (2013) ontologies and Arluke and Sanders’s (1996) ‘Sociozoologic Scale’. Continuing discussion about these belief systems and balanced critique of them and their implications for animals and habitats would help entities affected by disasters benefit from human decisions. In addition, exploration into the operational consequences of accepting or rejecting specific belief systems (especially human centrism and speciesism (e.g. Hovorka 2019)) could improve implementation of disaster-related activities.

Conclusion

This paper considered 5 non-exclusive categories and some diverse theories, policies and practices regarding animals and habitats affected by and affecting disaster-related activities. This contributes to the connections of topics and improves understanding in this field. These considerations challenge the notion that for a disaster to occur, it must affect people or society.

Many aspects of animals and habitats described in the categories are valued based on human interest. Whether or not nature and the environment have intrinsic value irrespective of human acknowledgment, judgement or interest is an ongoing discussion. These issues deserve continued philosophical and practical exploration and discussion so that they are appropriately incorporated into disaster-related activities, especially for pre-disaster actions.

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