

## ANIMAL WELFARE SCIENCE UPDATE

ISSUE 76 – SPECIAL EDITION



The aim of the animal welfare science update is to keep you informed of developments in animal welfare science relating to the work of the RSPCA. The update provides summaries of the most relevant scientific papers and reports received by the RSPCA Australia office in the past quarter. **Click here to subscribe**.



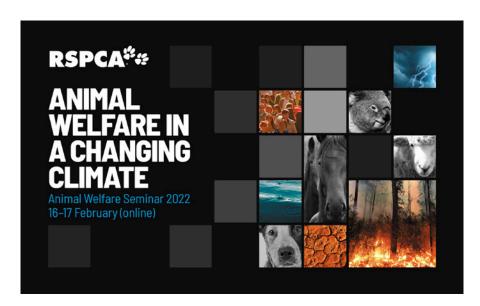
#### ANIMAL WELFARE IN A CHANGING CLIMATE

#### Introduction

Climate change is a significant animal welfare issue. Climate change affects all Five Domains of animal welfare (nutrition, environment, health, behaviour and mental state). It impacts animals on land and at sea. It drives more frequent and severe disasters, such as floods, heatwaves, droughts and bushfires. It causes animal suffering and death. The deaths of billions of animals in the 2019/2020 Black Summer bushfires in Australia are a dramatic illustration of the animal welfare consequences of climate change. Urgent action is required to address climate change and prevent animal suffering.

Climate change has severe animal welfare consequences yet animal welfare has rarely been considered in climate change research, policies and programs. The focus has largely related to conservation including impacts on species, populations and ecosystems, rather than the impact on animal welfare. It is critical to better understand the impact of climate change on animal welfare in order to protect animals in a changing climate.

This Special Edition of the Science Update showcases contemporary research relating to the effects of climate change on the welfare of companion animals, farm animals, animals used in sport and wild animals. It includes research presented at the RSPCA Australia Animal Welfare Seminar 2022 'Animal Welfare in a Changing Climate'.



#### Acknowledgements

RSPCA Australia thanks the presenters and panellists for their contributions to the RSPCA Australia Animal Welfare Seminar 2022 and this Special Edition of the Science Update. Funding was gratefully received through a CommBank Staff Foundation Community Grant.

#### **RSPCA** policy on climate change

RSPCA Australia acknowledges that climate change is a One Welfare issue that threatens people, animals and our shared environment. In 2021, RSPCA Australia released a new climate change policy.

#### RSPCA Policy GP6 Climate change

- 6.1 RSPCA Australia recognises the significant impact that climate change is having on the welfare of animals, whether living in the wild or in the care of humans.
- 6.2 RSPCA Australia considers that action is urgently needed to address the impacts of climate change in Australia to reduce the impacts on animals.
- 6.3 RSPCA Australia advocates for the consideration of animal welfare in the formation and adoption of national, state and industry climate policy and policies related to drought, fire, flood and other extreme weather events.

#### COMPANION ANIMALS

#### Dog deaths from heat-related illness likely to increase with climate change

As heatwaves become more frequent and severe with climate change, dogs are at increasing risk of heat-related illness (HRI). However, there is a lack of population level information about HRI in dogs. This cohort study aimed to identify risk factors, and estimate the incidence and case-fatality rate of HRI in dogs in the United Kingdom. The authors analysed VetCompass records for 905,543 dogs seen at 886 UK veterinary clinics in 2016. A total of 395 HRI events were identified. Risk factors for HRI included breed, bodyweight and age. Purebred dogs particularly flat-faced (brachycephalic) dogs, dogs weighing over 50kg and dogs ≥12 years old had higher odds of HRI. The highest incidence of HRI was identified

in brachycephalic breeds including chow chows, bulldogs, French bulldogs and pugs. Unexpectedly, companion greyhounds were found to have 4.26 times the odds of HRI (compared to Labradors), possibly due to greyhounds' susceptibility to post-exercise hyperthermia. Of the 395 HRI events, 56 resulted in death (14.18%). The incidence and fatality rate of HRI is likely to increase in a changing climate.

Hall EJ, Carter AJ, O'Neill DG (2020) <u>Incidence and risk</u> <u>factors for heat-related illness (heatstroke) in UK dogs under primary veterinary care in 2016</u>. Scientific Reports 10, 9128.

## How to reduce the carbon footprint of companion animals

Climate change affects people and animals. People and companion animals are affected by extreme weather events, human migration, disasters and social inequities related to climate change. In a changing climate, direct risks to companion animals include more dogs dying in hot cars, increased disease risks, and heat-related illness. Obese animals and brachycephalic (flat-faced) breeds are at particularly high risk of heat-related illness in a changing climate. In addition, the contribution of companion animals to greenhouse gas (GHG) emissions must be considered including the production of pet food and use of plastics (derived from petroleum products) in packaging, toys and waste bags. The authors adapt the 3Rs (replacement, reduction and refinement) framework to recommend strategies to reduce the GHG emissions of companion animals. For example, they recommend selecting companion animal species that are more sustainable, reducing the number of companion animals per household and exploring companion animal diets with a lower carbon footprint.

Protopopova A, Ly LH, Eagen BH et al (2021) <u>Climate change</u> and companion animals: <u>Identifying links and opportunities</u> <u>for mitigation and adaptation strategies</u>. Integrative and Comparative Biology 61(1):166-181.





#### Why do people risk their lives to save animals in disasters?

Climate change is increasing the frequency and intensity of extreme weather events including drought, bushfires and floods. During these disasters, the health and welfare of humans and animals are interdependent. For example, in the event of an emergency, people may delay evacuation or return to rescue their animals. Australians have lost their lives trying to save animals during disasters. It has been reported that over 8% of human lives lost in floods in Australia are the result of people trying to save farm animals, pets or property. This study identified several key knowledge gaps to help improve the health and welfare of human and non-human animals during extreme weather events. In particular, further information is needed on how and why people risk their lives to save farm animals and wildlife and how to improve preparedness. Ultimately, this information can be used to develop strategies to protect people and animals in a changing climate.

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):123-136.



#### **FARM ANIMALS**

#### Farm animals in tropical regions will experience heat stress almost all year round

Climate change increases the risk of heat stress, a significant animal welfare issue. Globally, the percentage of cattle exposed to dangerous heat conditions is predicted to increase from 7% currently to around 48% by 2100. Conditions will exceed the ability of farm animals to respond or adapt. The result will be mass suffering and death. This study overlaid data on global temperatures 2015 to 2020 on information about the thermoneutral zone of beef and dairy cattle, goats, pigs and poultry. The aim was to evaluate future risks of heat stress in farm animals. The study found that in a changing climate, farm animals in humid tropical regions will experience heat

stress almost all year round. Pigs and poultry will be at high risk of heat stress as they are typically kept confined in high densities. The authors discuss two possible paths of action, adaptation or displacement. Adaptation requires strategies such as selective breeding and artificial cooling. In areas where the costs of adaptation cannot be met, animal agriculture will be displaced.

Carvajal MA, Alaniz AJ, Gutiérrez-Gómez C et al (2021) Increasing importance of heat stress for cattle farming under future global climate scenarios. Science of the Total Environment 801, 149661.



## Floods threaten farm animals physically and emotionally

Climate change increases flood risk. Despite the increasing risk, there has been little research published on the impact of floods on farm animal production systems. This review evaluates the impact of floods on dairy production systems and the welfare of dairy cattle. Disasters such as floods can be physically and emotionally harmful to animals. To understand animals' experience of floods, the authors classify different types of direct and indirect damage in terms of nutrition, health, reproduction and behaviour. Dairy cattle in floods suffer from mastitis, lameness, injuries, malnutrition, stress, abortion and drowning. Recommendations are made to improve preparedness and provide better emergency care.

Gaviglio A, Corradini A, Marescotti ME et al (2021) <u>A</u> theoretical framework to assess the impact of flooding on dairy cattle farms: identification of direct damage from an animal welfare perspective. Animals 11(6), 1586.

## Climate change increases the risk of potentially fatal heat stress

The negative effects of climate change on animal health and welfare include heat stress, compromised immune function and disease. In cattle, heat stress can lead to metabolic changes, acidosis, laminitis and painful lameness. In hot conditions, animals need to expend energy to keep cool but heat suppresses appetite, so animals are not able to consume enough food to meet energy requirements. This leads to a negative energy balance and compromised function. Heat-related illness can be fatal. In a changing climate, insects expand their range and pathogens grow more readily in the environment. This leads to increased infectious disease risk. Strategies are urgently needed to prevent and manage the animal welfare risks of climate change.

Lacetera N (2019) <u>Impact of climate change on animal health and welfare</u>. Animal Frontiers 9(1):26–31.



## Climate change affects farm animals at every stage of the supply chain

Climate change has wide-ranging effects on farm animal health and welfare. There is ample evidence that climate change affects farm animals at every step of the supply chain from water and feed quality, to heat stress during transport. Farm animal transport may face further scrutiny in a changing climate. For example, live export of sheep from Australia to the northern hemisphere was prohibited at certain times of the year due to concerns about heat stress. In a changing climate, farm animals are at higher risk of harm from infectious diseases and plant toxins. Increased ambient temperatures can increase the carriage and shedding of zoonotic pathogens (transmissible from animals to people) such as Salmonella, E.coli and Campylobacter. An increased risk of extreme weather events such as droughts, bushfires, floods, cyclones and storms, also directly threatens farm animals. It is estimated that half a million farm animals (mainly cattle), were killed in the 2019 Queensland floods. The impact of climate change on farm animals will be particularly severe in marginal areas and where resources for mitigation are limited.

Godde CM, Mason-D'Croz D, Mayberry DE et al (2020) Impacts of climate change on the livestock supply chain; a review of the evidence. Global Food Security 28, 100488.

## Climate change mitigation strategies can impact animal welfare

Ruminant farm animal (e.g., cattle) production is a major contributor to climate change. Significant greenhouse gas (GHG) emissions from ruminant farm animal production include methane, carbon dioxide and nitrous oxide. Strategies have been proposed to decrease GHG emissions from farm animal production. These strategies have animal welfare implications. This review discusses the animal welfare implications of GHG mitigation strategies that aim to reduce production of methane gas or increase production efficiency. Disrupting rumen function by feeding anti-methanogens (e.g., chemical inhibitors, nitrates, ionophores, dietary lipids) can cause health and welfare issues such as toxicity and impaired digestion. Further intensifying production (e.g., intensive housing, increasing feed conversion efficiency) can have serious welfare implications such as increased risk of stress and metabolic disease. When considering options for GHG mitigation, animal welfare must be considered alongside environmental sustainability.

Llonch P, Haskell MJ, Dewhurst RJ et al (2017) Current available strategies to mitigate greenhouse gas emissions in livestock systems: An animal welfare perspective. Animal 11(2):274-284.



#### Measuring farm animal stress indicators in a changing climate

Climate change is a significant threat to farm animal production and welfare. Measures of physiological stress can be used as indicators to evaluate the impact of climate change on farm animals. This review aimed to evaluate studies on climate change, physiological stress, animal welfare and animal production outcomes. A total of 563 studies were identified, of which 125 articles discussed the impact of climate change on farm animals or vice versa. There is evidence that improving farm animal welfare can increase profitability and environmental sustainability.

The authors recommend that future studies integrate climate change, stress physiology, animal welfare and animal production outcomes to improve a holistic understanding of the impact of climate change on farm animals.

Narayan E, Barreto M, Hnatzopoulou GC et al (2021) <u>A</u> retrospective literature evaluation of the integration of stress physiology indices, animal welfare and climate change assessment of livestock. Animals 11(5), 1287.

## Pigs are vulnerable to the effects of climate change

The impact of climate change on pigs has received less attention compared to ruminant farm animals. This review details the effects of climate change on pigs in the European Union (EU). In a changing climate, pigs are at high risk of heat stress, extreme weather events, altered food availability and food safety, illness and death. For example, during a 2003 heatwave in Europe, thousands of pigs died. Predictive models are needed to characterise how pigs will be affected under different climate change scenarios.

Renaudeau D, Dourmad JY (2021) <u>Review: Future</u> consequences of climate change for European Union pig production. Animal 100372.

#### Goats get heat stressed too

As opportunistic feeders with adaptations to tropical climates, goats have been described as more climate resilient compared to other farm animals. However, goats in hot humid conditions can still suffer from heat stress, nutritional stress, thirst, disease and lameness. To ensure goat welfare in a changing climate, considerations include environment, genetics, handling and transport. For example, when being transported, goats may need water and/or electrolytes every twelve hours or more frequently if they are young or lactating. A range of behavioural, physical and physiological indicators are proposed to monitor goat welfare in a changing climate.

Sejian V, Silpa MV, Reshma Nair MR et al (2021) <u>Heat stress</u> and goat welfare: Adaptation and production considerations. Animals 11(4), 1021.



## Climate change puts all farm animals at higher risk of heat stress

Climate change creates conditions that exceed the capacity of poultry, pigs and cattle to maintain their normal body temperature. Consequently, animals are at high risk of heat stress. This study combines global climate and farm animal distribution data to make projections about the number of extreme heat stress days per year under different climate change scenarios. Globally, by the end of the twenty-first century, all farm animals in the tropics and some temperate areas will suffer from extreme heat stress. Adaptation strategies such as selective breeding and active cooling will become critical. It is possible that cattle production will shift and poultry production may be displaced in some areas.

Thornton P, Nelson G, Mayberry D et al (2021) <u>Increases in extreme heat stress in domesticated livestock species during the twenty-first century</u>. Global Change Biology 27(22):5762-5772.

## Climate change will have adverse effects on poultry

Egg-producing (laying) hens and meat chickens (broilers) have a thermoneutral zone (TNZ) of 18 to 22°C. At temperatures above their TNZ, poultry experience heat stress. Heat stress has flow on effects for bird behaviour, physiology, immune function and health. Consequently, climate change will adversely affect poultry in a variety of ways. For example, devastating poultry disease outbreaks associated with climate change are predicted such as salmonellosis, coccidiosis, mycotoxicosis and *E. coli*. To help manage risk in a changing climate, consideration should be given to genetic selection for thermal tolerance, appropriate shelter, shade, ventilation and cooling, modified density and housing, and potential nutritional interventions.

Vandana GD, Sejian V, Lees AM et al (2020) Heat stress and poultry production: Impact and amelioration. International Journal of Biometeorology 65:163-179.

## ANIMALS IN SPORT, ENTERTAINMENT, PERFORMANCE RECREATION AND WORK

## Working equids are essential for climate change resilience in low to middle income countries

Climate change disproportionally affects vulnerable communities in low to middle income countries. Globally, an estimated 300 to 600 million people in these communities rely on working equids for income and support. Working equids become even more critical during extreme weather events and disasters. This review investigates the role of working equids in supporting vulnerable communities affected by extreme weather events and disasters. Working equids are used for transport, as draught animals, to plough and till the land for agriculture, and as pack animals to carry essential supplies. During disasters, they serve as lifelines, providing access to food, water, medicine, goods and services. Case studies are presented to illustrate the role of equids in climate crises. For example, donkeys have survival advantages during drought and have been used to maintain supplies of food and water to people and other livestock. Millions of people need working equids to respond to extreme weather events and disasters such as drought and floods. If working equids are to fulfil their many essential roles, their welfare must be paramount. However, despite their critical role in climate change resilience, the welfare of working equids remains a

neglected area in sustainable development initiatives. Climate change planning often considers livestock but horses, donkeys and mules are generally excluded. The authors recommend that working equids and their welfare should be considered in international development, disaster relief, aid and recovery programs.

Clancy C, Watson T, Raw Z (2021) <u>Resilience and the role of equids in humanitarian crises</u>. Disasters doi: 10.1111/disa.12501.





#### Racehorses at increasing risk of heat-related illness in a changing climate

Climate change has led to increased average temperatures in Japan over the past century. In warmer, more humid conditions, Thoroughbred racehorses are at higher risk of exertional heat illness (HRI). This study aimed to investigate the prevalence of post-race exertional heat-related illness (EHI) in racing Thoroughbreds in Japan from 1999 to 2018, and the relationship between EHI prevalence and climatic conditions. Prevalence of EHI in Thoroughbred racehorses increased in Japan over the twenty-year study period. Clinical signs of EHI included profuse sweating, rapid breathing and heart rate, head shaking, kicking, pawing and gait abnormalities. Prevalence in summer was significantly higher compared to other seasons. Races were held

in conditions that racing authorities recognised as moderate to high risk of heat stress (wet bulb globe temperature ≥28-33°C). The authors recommend evidence-based policies to prevent HRI in racing Thoroughbreds and counter-measures such as misting and cooling.

Nomura M, Shiose T, Ishikawa Y et al (2019) <u>Prevalence of post-race exertional heat illness in Thoroughbred racehorses and climate conditions at racecourses in Japan</u>. Journal of Equine Science 30(2):12-23.

#### Climate change threatens equine health and welfare

This report, prepared in South Australia, reviews the impact of climate change on horses including effects on breeding, equine diseases, cognitive function, and pasture and track quality. For example, there appears to be climate related increases in the incidence of neurological disease in horses with severely affected horses having to be euthanased on animal welfare grounds. A variety of equine diseases are predicted to expand their range. Risks of heat stress during training, transport and competition will increase in a changing

climate. Recommendations are made for assessments of horses' carbon footprint and the overall vulnerability of Australian horse industries to climate change.

Rebbeck MA (2013) The impact of climate change on horses, and horse industries: some gaps and opportunities identified using available literature. A report for the Australian Government Rural Industries Research and Development Corporation. RIRDC, Canberra.



#### Discussing 'climate change' may be problematic in equestrian cultures

Australia has experienced extreme weather events due to climate change. This study explored the impact of these extreme weather events on horses and equestrian cultures. Horse owners (n=69) were surveyed to investigate their response to extreme weather events including drought and floods. A range of horse health issues are associated with climate such as colic, skin infections, vector borne diseases and heat stress. Considering the risk of extreme weather events, there are increasing concerns about horses during training, competition and transport. However,

the term 'climate change' appeared to be problematic. Horse owners surveyed were more likely to respond to discussions about 'horse health and welfare' and 'land care' rather than 'climate change' per se. There is a need for further education, research and policy to protect horses in a changing climate.

Thompson K, Clarkson L, Rebbeck M (2018) Too hot to trot? How horse owners in Australia have responded to major weather events. Rural Society 27(1):52-65.

#### WILD ANIMALS

## Lessons from the 2019/2020 Black Summer bushfires

This report outlines a set of actions to address the animal welfare and conservation concerns raised in the aftermath of the 2019/2020 Black Summer bushfires in Australia. An effective and rapid response system is urgently needed to rescue and treat wild animals affected by bushfires. Individual animal care must be a priority. There is a need for improved resource coordination, volunteer training, and bestpractice guidelines for care, euthanasia or release. In addition, animals in burnt areas may benefit from supplementary food, water and shelter where habitat has been destroyed by fire. Increased capacity and resourcing are required to meet animal care demands. The authors recommend greater collaboration between relevant government agencies and nongovernment organisations to prioritise, plan, fund and resource animal welfare interventions in bushfires.

Dickman C, Driscoll D, Garnett S et al (2020) <u>After the catastrophe</u>: A blueprint for a conservation response to <u>large-scale ecological disaster</u>. A report for the Threatened Species Recovery Hub.

#### The catastrophic impact of the Black Summer bushfires on native wildlife

During the summer of 2019/2020, over 15,000 bushfires burnt across Australia (the Black Summer bushfires). This comprehensive study by the World Wildlife Fund (WWF) aimed to estimate the number of individual vertebrate animals affected by the Black Summer bushfires. Field survey data was analysed together with information on animal density, life history, habitat and the fires. Taxa included terrestrial mammals, bats, reptiles, birds and frogs. The analyses indicated that the fires affected an area estimated to contain approximately 3 billion native vertebrates including 143 million mammals, 2.46 billion reptiles, 181 million birds and 51 million frogs.

van Eeden LM, Nimmo D, Mahony M et al (2020) <u>Impacts of the unprecedented 2019-2020 bushfires on Australian animals</u>. Report prepared for WWF-Australia, Ultimo NSW.





#### Coordinating wildlife rescue in the 2019/2020 Black Summer bushfires

Wild animals are at risk from increasingly frequent disasters such as bushfires. For example, countless wild animals were affected by the 2019/2020 Black Summer bushfires in Australia. This paper describes the role of Zoos Victoria, a zoo-based not-for-profit organisation, in the response to the 'Black Summer' response and recovery efforts. The authors describe the coordination of the wildlife response plan, case studies and actions taken including triage, evacuation, resourcing and the provision of supplementary food and water. Zoos Victoria and partner organisations have designed protocols and programs to aid future preparedness, response and recovery efforts.

Parrott ML, Wicker LV, Lamont A et al (2021) Emergency response to Australia's Black Summer 2019-2020: The role of a zoo-based conservation organisation in wildlife triage, rescue, and resilience for the future. Animals 11(6), 1515.

#### Climate change is a welfare issue for wild cetaceans

This book chapter outlines the case for climate change to be regarded as a welfare issue for wild cetaceans (whales, dolphins, porpoises). Broadly speaking, the welfare of cetaceans is threatened by climate change due to physical and chemical alterations in their environment. Most notably, changes in sea temperature and food availability may cause distress, hunger and affect their overall quality of life. Recommendations are made to apply the Five Domains Model of animal welfare to further characterise the impact of climate change on wild cetacean welfare.

Simmonds MP (2017) Evaluating the welfare implications of climate change for cetaceans. In: Butterworth A (ed) Marine mammal welfare: Human induced change in the marine environment and its impacts on marine mammal welfare. Springer, Bristol UK, p125-135.

#### Native wildlife should be incorporated in emergency response planning

Climate change is causing increasing temperatures, and more frequent and severe fires and floods. During these disasters, wild animals are often last on the priority list after people, property, companion animals and farm animals. This discussion paper argues that more must be done to protect wild animals in disasters. Some wildlife rescue organisations have mobilised. For example, NSW Wildlife Information, Rescue and Education Service Inc. (WIRES) has put together emergency response teams.

More broadly, the authors recommend that emergency services in Australia must incorporate wildlife response and recovery in their planning, protocols, policies, procedures and processes.

Taylor L (2021) <u>Improving outcomes for wildlife</u>. Australian Journal of Emergency Management 36(3), 18.



#### **MISCELLANEOUS**

## The animal welfare consequences of a 3°C increase in global temperature

If the 2015 United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement emission reduction targets are not met, global mean surface temperature is predicted to increase by 3°C or more above the pre-industrial period by 2100. A 3°C increase will have significant animal welfare consequences associated with an increase in the number of heat stress days per year, marine heatwaves, and more severe and frequent droughts, floods and bushfires. For example, an estimated 3 billion vertebrate animals were killed or displaced during the 2019/2020 Australian bushfires. At 3°C warming, the effects of current stressors, such as habitat loss and over-harvesting, will be exacerbated and extinctions are forecasted.

The Australian Academy of Science (2021) <u>The risks to Australia of a 3°C warmer world</u>.

## Climate change and animal welfare concerns inform consumer behaviour

Climate change and the global COVID-19 pandemic have led to increasing concerns about the consumption of animals. This study explored the intersection of consumer concerns about environmental sustainability, human health and animal welfare. Three goals relating to consumer behaviour are explored: (1) eat less animal protein, (2) eat "less and better" animal protein and/or (3) eat "less worrisome" animal protein. Concerns about climate change and animal welfare were found to inform consumer decision-making. Trade-offs associated with species, production and location must also be considered to formulate sustainable diets in a changing climate.

de Boer J, Aiking H (2022) Considering how farm animal welfare concerns may contribute to more sustainable diets. Appetite 168, 105786.

#### A One Welfare approach to climate change

One Welfare recognises the interconnectedness of human, animal and environmental well-being. A One Welfare approach aims to improve the welfare of all life on Earth. Climate change represents an existential threat to humans, animals and the environment and can therefore be regarded as a One Welfare issue. For example, climate change is affecting the risk of heat-related illness and disease in humans and animals. A One Welfare approach to climate change demands that we rethink the treatment of animals and the environment and requires us to make fundamental changes to the way we treat all living things.

Fawcett A (2020) One Welfare, the role of health professionals, and climate change. Animal Sentience, 371.





#### Veterinarians need to take stronger action on climate change

Climate change is an animal health and welfare emergency. Hence, climate change can be considered a veterinary problem. In this book chapter, one of the founding members of Veterinarians for Climate Action (VfCA), Dr Angela Frimberger outlines climate change science, and the role of veterinarians in climate change action. Veterinarians are charged with using their scientific knowledge and skills to: improve animal health and welfare, prevent and relieve animal pain and suffering, and promote public health. Consequently, Dr Frimberger argues that taking action on climate change is part of veterinarians' professional duty. Veterinarians routinely engage with communities and communicate complex scientific concepts to lay people, skills which can also be employed to progress climate change action. Dr Frimberger urges veterinarians to organise and advocate as a profession, and positively influence industry, the public and government in regards to climate change policies and practices. This book chapter is a call to action for veterinarians to take stronger action on climate change.

Frimberger A (2021) Climate change as an animal welfare problem: The role of the veterinarian. In: Stephens T (ed) One Welfare in Practice: The role of the veterinarian, CRC Press, Boca Raton USA.

#### **IPCC** reports should consider animal welfare

The Intergovernmental Panel on Climate Change (IPCC) Assessment provides policy makers with current knowledge on the impact of climate change. To date, IPCC reports have not considered the impact of climate change on animal welfare. The IPCC only considers the impact on animals in terms of species, ecosystems and biodiversity. McShane argues that the impact of climate change on individual animals' quality of life should be considered as a critical part of climate policy. Climate change is caused by human actions and we have an ethical responsibility to consider how our actions affect the welfare of animals. A comprehensive suite of animal welfare indicators can be used to measure the impact of climate change and incorporate this impact into IPCC reports.

McShane K (2021) Why animal welfare is not biodiversity, ecosystem services, or human welfare: Toward a more complete assessment of climate impacts. The Ethics Forum 13(1):43-64.

#### The interests of animals should be considered in climate change policy

The standard approach to climate change is anthropocentric, that is it concentrates on human interests and harms to humans. However, in contemporary ethics, it is well acknowledged that nonhuman animals also have interests and those interests matter beyond merely 'existence value' or 'usefulness' to people. That is to say, animal welfare is distinct from biodiversity values or ecosystem services. This paper details why animal welfare and the interests of nonhuman animals are morally important and should be considered in climate change policy.

McShane K (2016) Anthropocentrism in climate ethics and policy. Midwest Studies in Philosophy 13(1):43-64.



## Improving animal welfare outcomes in bushfires

Bushfires have a devastating impact on animals. This study used document analyses and interviews with people (n=38) from different government and nongovernment organisations (n=19) to investigate gaps in animal welfare emergency management (AWEM) arrangements for bushfires in New Zealand. To safeguard animal welfare in bushfires, improvements are required in response structure, evacuation and sheltering, cordon management and communication.

Squance H (2021) <u>Enhancing multi-agency collaboration</u> <u>for humane animal welfare outcomes – wildfire responses</u>. Research Report for The Bob Kerridge Animal Welfare Fellowship.

## How well do you know the National Planning Principles for Animals in Disasters in Australia?

The National Planning Principles for Animals in Disasters, endorsed in 2014, aim to inform animal management in disasters in Australia. The 2019/2020 Black Summer bushfires highlighted the critical importance of incorporating the 'principles' into emergency policies and procedures. This study conducted in 2020, surveyed Australian organisations involved in animal management in disasters (n=137) to investigate how the 'principles' were being applied. The survey found moderate awareness and low to moderate implementation. There is a need to improve animal management in disasters, enhance communication strategies and translate the National Planning Principles for Animals in Disasters into practice.

Trigg J, Taylor M, Mills J et al (2021) <u>Examining national planning principles for animals in Australian disaster response</u>. Australian Journal of Emergency Management 36(3):49-56.





#### WHAT CAN WE DO TO PROTECT ANIMALS FROM CLIMATE **CHANGE?**

There are many things we can do to protect animals from the effects of climate change. Actions may aim to address climate change broadly or prevent, mitigate and manage the effects of climate change on animals. Actions to address climate change can take place at an individual, organisation and government level.

#### **Individual actions**

Every individual can make a difference. The Australian Climate Council outlines personal choices we can all make to reduce our individual carbon footprint including investing in renewables, divesting from fossil fuels, buying locally, reducing meat consumption, travelling sustainably, reducing waste, going plastic free and advocating for climate action.

Individuals in charge of animals including pets and farm animals can take direct actions to decrease their animals' carbon footprint and increase climate change preparedness. RSPCA South Australia has produced resources covering pets in emergencies and the NSW State Emergency Services (SES) provides step by step instructions for pet owners to make an Animal Emergency Plan. Meat & Livestock Australia (MLA) have useful resources to assist producers in preparing for, managing and recovering from fires, floods and droughts. There are many online resources to help farmers adopt sustainable land management practices that promote increased biodiversity as well as resilience to climate change.

#### **Organisation-level actions**

As outlined by Climate Action Australia, organisations and businesses can address climate change by focusing on five key areas including energy, water, transport, waste and climate conscious superannuation for staff. Plans, policies and procedures can be put in place by organisations to guide staff, clients and consumers in their response to climate change. A recent Special Edition of the Australian Journal of Emergency Management outlines steps to

improve emergency animal management and a collaborative project funded by Meat & Livestock Australia (MLA) is preparing a <u>Livestock Bushfire</u> Preparedness and Recovery Manual due for publication in 2022. Industry peak bodies can actively encourage and support their members to adopt practices that promote both good animal welfare and climate change action.

#### **Government-level actions**

Leadership on climate change is needed at a government level. To address climate change, the Australian Government needs to take immediate action including adopting effective national climate policy, investing in renewables and introducing stronger environmental protection laws. These changes will reduce greenhouse gas emissions, minimise concurrent threats, and reduce the harmful effects of climate change on humans, animals and our shared environment.

#### Conclusion

Climate change has serious animal welfare consequences. Urgent action is required to protect animals from the consequences of climate change. The RSPCA urges individuals, organisations and all levels of government to take immediate action to safeguard animal welfare in a changing climate.



#### **ARTICLES OF INTEREST**

#### **COMPANION ANIMALS**

Ingenpa $\beta$  L, El-Wahab AA, Ullrich C et al (2021) Nitrogen output in the urban environment using a vegetarian canine diet. PLOS One 16, e0257364.

Knight A, Leitsberger M (2016) Vegetarian versus meatbased diets for companion animals. Animals 6(9), 57.

Martens P, Su B, Deblomme S (2019) The ecological paw print of companion dogs and cats. BioScience 69(6):467-474.

Okin GS (2017) Environmental impacts of food consumption by dogs and cats. PLOS One 12, e0181301.

#### **FARM ANIMALS**

Caroprese M, Bradford BJ, Rhoads RP (2021) Editorial: Impact of climate change on immune responses in agricultural animals. Frontiers in Veterinary Science 8, 732203.

Caulfield, M. P., Cambridge, H., Foster, S. F., & McGreevy, P. D. (2014). Heat stress: A major contributor to poor animal welfare associated with long-haul live export voyages. The Veterinary Journal 199(2):223–228.

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