BEHAVIOUR AND THE CONSEQUENCES OF RISING TEMPERATURES

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FOR VETS

As heat waves become increasingly common, veterinarians call for extra vigilance and pets are likely to require special attention.

AS TEMPERATURES GATHER PACE...

cats and dogs' habitats change dramatically. At the same time, new climatic conditions are disrupting their core behaviour patterns and triggering physical and psychological changes. Direct effects of climatic warming are related to decrements in the organism's performance in growth, reproduction, foraging, immune competence, competitiveness, and behaviours. Moreover, performance in animals falls below its optimum during cooling and warming.

Since extreme weather events, including wild thunderstorms, torrential rains, and flooding, are predicted to rise in frequency and severity[1,2,3],increased attention is necessary to identify and implement adaptation strategies[4,5]. The consequences of rising temperatures can modify human management, and thus aggravate pre-existing behavioural problems[4].

> **THE WEATHER GETS WORSE IN EVERY SENSE (COLD WINTER, HOT SUMMER) AND OWNERS USE MORE HEATERS AND CHANGE ROUTINES. MANY ANIMALS CAN'T MANAGE AND SO THEY SUFFER. THEY NEED OUR HELP TO ADAPT.**

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KEY TAKEAWAYS

- Veterinarians should **inform and advise owners on how to manage the consequences of rising temperatures** on animal wellbeing.
- Heat-related illnesses, **especially heat-stroke,** are a chief concern during European summers[6,7,8,9].
- Small changes in routine **can have far reaching effects**[10,11]. For example, less exercise opportunities due to warm weather can lead to obesity[12,13,14].
- A longer reproductive season for cats has meant an **increase in abandonments**[15].
- As a consequence of rising temperatures, there is an increase in the frequency and intensity of storms, which **can lead to phobias in dogs and cats**[16,17,18].

HOW ELSE ARE THE CONSEQUENCES OF RISING TEMPERATURES AFFECTING PETS?

All the events linked to changes in temperature patterns are leading pets' owners to change their routine based on the weather conditions. **Changes in daily routines can create a condition of distress**[10], **worsening all forms of anxiety and exacerbating problems.** In these circumstances, pre-existing pathological conditions, such as barking, hyperactivity, anxiety, separation anxiety[19], fear, thunderstorm phobia, and cognitive dysfunction in older animals could worsen[9].

WEATHER EVENT	EFFECT ON DOGS AND CATS
Heat waves	Dogs and cats can fall prey to heat exhaustion at temperatures as low as 20°C. **Above 30°C, heatstroke becomes a risk.** **Heatstroke has an extremely high mortality of up to 50%**, and cases increase during extreme weather events.
Extreme cold	As pets lose exercising opportunities, **the risk of obesity increases.**
Longer autumn, shorter winter	Cats' breeding frequency increases with a longer season. **This leads to more litter abandonments.**
More intense or frequent storms	**Thunderstorm phobias** in dogs and even cats.

HEAT

The rise in extreme hot weather can increase the risk of heat exhaustion and heatstroke. Similar to heat, uncomfortable weather for people can translate as reduced walking opportunities for pets[14]. Changes in routine can lead to mood changes and discomfort[13, 20, 21,10].

The rise in extreme hot weather **can increase the risk of heat exhaustion and heatstroke.** Pets can be vulnerable to these conditions in temperatures as low as 20°C, in situation such as being left in the car, and the risk becomes acute once temperatures pass 30°C[7, 8, 9]. The risk is even greater for long-haired breeds normally adapted to cooler areas and for brachycephalic animals which struggle to dissipate heat through their compressed upper respiratory airways[22, 23, 24].

Pets with cardiac issues[25] and pets that are overweight, very young, or very old, can be similarly vulnerable[26]. **Vets should advise pet owners to exercise their dogs during the cooler hours, and to take water with them on every outing.** At home, pet owners should provide shade, water, and a way for their furry friends to escape the heat.

COLD

Similar to heat, uncomfortable cold weather can translate as reduced walking opportunities for pets. Changes in routine can lead to mood changes and discomfort[4].

BREEDING DISRUPTION

The consequences of rising temperatures have an effect on breeding patterns[14]. This has been noted among cats, who generally reproduce during the warmer months. In some cases, cats continue to breed deep into the winter, **which means more kittens are being left abandoned. The problem is borne out by tragic anecdotal evidence across Europe.**

PHOBIAS AND ANXIETY

An increase in extreme weather events may worsening all forms of anxiety and exacerbating problems. In these circumstances, pre-existing pathological conditions, such as fear and thunderstorm phobia could worsen[9, 19]. Storm phobia in companion dogs is a common disorder that significantly impacts dogs' welfare. Subjects who previously suffered from fears or phobias toward loud noises can worsen the symptoms during sudden and violent thunderstorms[17]. **Phobic reactions may have extended consequences since dogs exposed to loud noises may not recover and may show signs of behavioural disorders even weeks after the exposure**. For these reasons storm phobias are a **real concern for the dog's wellbeing and health[16].**

Furthermore, changes in owner routines could be disadvantageous to dogs by **increasing their potential risk of developing separation-related behaviours[27, 11].**

Moreover, many factors within the environment have been suggested to **influence the incidence or development of age related cognitive decline.** Exposure to cognitive stressors such as sudden noise or light (thunderstorms) have been identified as variables that may affect cognitive function throughout life [28, 29, 30, 31].

PETS AND NATURAL DISASTERS

One feature of the consequences of rising temperatures is an increase in natural disasters like flooding, landslides and forest fires. When these natural disasters displace humans, pets suffer, are separated from their families and never reclaimed.

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