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Inclusive Cities for All Beings: Urban Animal Governance From a "One Welfare" Perspective

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Abstract

Urban environments are predominantly designed and governed from a human-centred perspective, largely overlooking the experiences and welfare of animals. Yet cities are shared spaces in which animals live in environments profoundly shaped by human activity. Because of global urbanisation, interspecies interactions will intensify, becoming more frequent and complex. This development raises pressing questions about the welfare of animals in urban contexts and the human responsibility for these animals. While humans hold direct responsibility for domestic animals under their care, such as cats and dogs, we argue that they also bear indirect obligations toward commensal species, such as rats, foxes, and pigeons, whose lives depend on human-modified habitats. Situating urban animal welfare alongside human wellbeing aligns with the One Welfare framework, which recognises the interdependence of human, animal, and environmental welfare. In contrast to narrower One Health approaches that primarily focus on health risks and biosecurity, One Welfare foregrounds welfare and relationality across species. This article argues that animal welfare should be understood as a constitutive element of urban governance rather than a secondary concern. Drawing on illustrative examples from Belgian cities, the study demonstrates that, to date, animal welfare considerations remain insufficiently integrated into urban governance practices. Therefore, we call for the systematic integration of scientific animal welfare knowledge into urban governance to advance animal welfare. Building on the One Welfare framework, the article advances the concept of "multispecies cities" as part of a broader vision of compassionate urban futures grounded in care and coexistence between humans and animals.

Keywords
animal welfare; biopolitics; commensal species; domestic species; inclusive cities; more-than-human; multispecies urbanism; One Welfare; urban governance

1. Introduction

For the first time in human history, more than half the human world's population lives within cities. By 2050, an estimated 68% of the world's population will live in urban areas (United Nations, 2019). This demographic transformation entails not only increasing human density but also a shrinking of the space for nonhuman animals (hereafter referred to as "animals") and, consequently, a growing presence of animals in cities. This leads to intensified interactions across species. Yet these encounters do not necessarily imply greater legitimacy for their presence or a more welcoming attitude from citizens. Some citizens are unsettled by the proximity of animals, while others relish encounters with animals nearby (Arcari et al., 2020). Cities are increasingly conceptualised as sites of diversity, inclusion, and coexistence. Urban policy discourses emphasise social inclusion, wellbeing, participation, and justice, particularly in relation to marginalised human populations. However, the lives and experiences of animal species remain largely absent from these discussions. While animals inhabit cities in significant numbers, their existence is often treated as an environmental problem or nuisance issue rather than a matter of inclusive and sustainable urban governance.

To a certain extent, the abovementioned ideas are rooted in a more anthropocentric worldview in which humans consider themselves as the centre of the universe. However, this position is currently challenged by more contemporary ontological frameworks such as the posthuman (Braidotti, 2013), new materialism (Bennett, 2016), Indigenous perspectives (Deloria, 1979), and deep ecology (Morton, 2016). Each of these ontological frameworks questions the notion of human supremacy, prompting a re-evaluation of humanity's self-conception and place in the world. These foundations inspire the development of urban environments as biophilic cities, more-than-human spaces, or multispecies entanglements (Franklin, 2017; Houston et al., 2018; Kone, 2022; Panlasigui et al., 2021). In these contexts, anthropocentrism is challenged by recognizing animal subjecthood and agency, positioning animals as active agents in shaping and co-constructing cities. However, in the urban policy discourse, taking animals into account for urban development purposes remains a low priority. In addition, urban development is often handled by multiple municipal authorities with conflicting missions and messages regarding the place of animals.

Although the scientific literature on animal welfare has expanded considerably, it remains primarily focused on farm and laboratory animals, while studies on animal welfare in urban environments remain comparatively less developed. However, there is a growing interest in urban animal welfare, driven by rising public interest, media coverage, and stakeholder engagement. Animals are more frequently recognised as subjects in their own right and as neighbours in urban environments. Governance policies, however, have mainly focused on the development of tools to reduce the suffering of domestic animals and promote their welfare, such as animal protection laws, urban animal policies (e.g., the trap-neuter-return of stray cats [TNR], off-leash zones for dogs), and structural arrangements (e.g., subsidies for NGOs). Animals in cities are furthermore subjected to various governance practices, including identification and spatial zoning that regulates where and how animals can be present and in which numbers. Moreover, while cities manage animals for diverse reasons, the animal welfare implications of these practices remain under-examined. This suggests that the anthropocentric worldview

slips through in how animal governance practices are operationalised. Policies are mainly responding to how humans actually respond to certain animals, thereby failing to capture the needs of different species and individual animals in relation to humans.

1.1. Objective of the Study

In this study, we aim to conceptualize inclusivity as a relational framework to examine how urban governance systems currently distribute recognition, access, and protection among animals in urban space and how they could be changed to accommodate humans and other animal species sharing the same urban space. We understand that inclusive cities are, as urban spaces, designed and governed to accommodate the needs, interests, and well-being of all inhabitants. Extending beyond human populations, an inclusive city can be conceived as a multispecies city—recognising that humans coexist with a wide range of animals who actively inhabit, shape, and are affected by urban environments.

Our research illustrates how urban planning, regulatory practices, and dominant urban discourses reproduce species-based inclusion and exclusion mechanisms by legitimising certain animals as co-inhabitants while framing others as nuisances. We position urban animal welfare within broader debates on inclusive governance, biopolitics, and urban futures. Drawing on empirical research conducted in Belgium, it adopts a One Welfare perspective to argue for systematic attention to animal welfare in urban policy.

This article first outlines the development of animal welfare science in relation to the One Welfare framework. Next, it introduces seven model species for the Western European urban context. It subsequently presents governance cases from Belgium and reflects on the insights gained for the development of multispecies urban ecosystems. The primary aim of this manuscript is to place the emphasis on reflecting upon the welfare of animals in urban contexts, rather than on animal rights in the city, as these represent distinct approaches within the broader field of animal governance. In addition, the detailed overview of the Belgian context may serve as a useful basis and point of reference for future studies examining urban animal governance and the integration of animal welfare science in other national and municipal settings.

2. Theoretical Framework: One Welfare

In this article, we start from the interdisciplinary One Welfare framework, emphasising that the wellbeing of humans, animals, and ecosystems is interdependent. Ontological frameworks such as posthumanism, new materialism, and Indigenous, ecological approaches have all challenged anthropocentrism and provide the philosophical grounding that facilitates a One Welfare governance perspective. It shifts the perspective from the worldview “humans at the centre” to “relational, multispecies entanglements” as the relational basis for liveable eco-systems for all. In this sense, One Welfare resonates with emerging theories of compassionate futures and care ethics that position interdependency, vulnerability, and mutual responsibility—not autonomy or utility—as the basis for organising social and ecological life.

3. Animal Welfare

3.1. The Early 20th Century

Animal sentience and welfare have been highlighted throughout centuries of European Western history by various thinkers and artists, including Aristotle, Plutarch, Charles Darwin, Michel de Montaigne, William Hogarth, Humphrey Primatt, Jeremy Bentham, and Henry Salt (De Ruyver, 2021). Before the science of animal welfare arose, there was the study of animal behaviour. Animal behaviour research took shape in the 20th century, albeit initially from two different perspectives. On the one hand, it developed from psychology, scholars, such as Wolfgang Köhler and Burrhus Frederic Skinner, who argued that the development of animal behaviour occurs essentially through learning processes (behaviourism). On the other hand, it developed from the branch of biology. Ethologists, such as Niko Tinbergen, Konrad Lorenz, and Karl von Frisch, assumed that behaviour is determined primarily through genes. The disagreement between the two perspectives lasted for about half a century, until they finally agreed that behaviour is the result of the interaction between genes and environment. In 1973, the pioneers of ethology—the biological study of behaviour—Karl von Frisch, Konrad Lorenz, and Nikolaas Tinbergen received international recognition with the Nobel Prize in Physiology or Medicine for their research on the behaviour of social animals, including the "dance language" of bees and the imprinting process in young birds.

Ruth Harrison described in the book *Animal Machines*, published in 1964, the practice of intensive livestock and poultry farming. She denounced the large-scale production and considered the lifestyle it entails for the animals as inhumane. Following this publication, the British government appointed a committee in 1965 to examine the welfare of farm animals. The committee made a report to inquire into the welfare of animals kept under intensive farming systems, which became known as Brambell's "five freedoms" (Brambell, 1965). This was further refined by the 1979 Farm Animal Welfare Council, which defined a framework for how to evaluate animal welfare in practice as follows: "Animals are free from: hunger, thirst or improper feeding; thermal and physical distress; injury or disease; fear and chronic stress; and animals are free to exhibit normal, species-specific behaviour patterns." Since then, the field of animal welfare science has undergone significant development. The scientific roots of animal welfare are multi-disciplinary and include fields such as ethology, cognitive-neural science, veterinary medicine, nutrition, ecology, environment, and design studies.

3.2. Individuals and Positive Welfare

Welfare concepts have now been expanded to encompass more than the resources an animal has available or the stressors to which it is exposed. The subjective experience of animals has become a crucial factor, as first proposed by Ian Duncan and colleagues in the 1980s. Today, a commonly used framework is the Five Domains model by David Mellor, which emphasises the mental state of the animal, as a result of its physical conditions (Mellor, 2017). Consequently, contemporary animal welfare science has introduced the notion of individuality and personality. This recognition extends beyond vertebrate animals to include invertebrates, which are also now believed to possess distinct personalities (Crespi-Abril & Rubilar, 2023). Another important shift is that not only negative experiences should be avoided, but positive ones should also be included. Moreover, different concepts for welfare assessment have been developed, such as the "quality of life and the dynamic animal welfare" concept, which aims to include lifespan (Arndt et al., 2022; Browning, 2022; Green & Mellor, 2011; Hecht, 2021). Arndt et al.'s (2022) proposal also takes into consideration the

changing environmental conditions: "The proposed animal welfare concept considers the dynamics of the animal's environment over time, of the animal's behaviour in response to changing environmental conditions, and the resulting interactions" (p. 3). The relevance of such approaches lies in the potential to make adaptations in welfare assessments. Animal welfare science is continually evolving and actively seeking paradigms to build upon. However, there is currently a strong consensus that the integration of positive welfare and an emphasis on the individual level should be central to the definitions of animal welfare. Therefore, for this article, the animal welfare definition developed by ANSES (2018) is used; it is one of the concepts integrating positive welfare and the individual animal: "The welfare of an animal is its positive mental and physical state as related to the fulfilment of its physiological and behavioural needs in addition to its expectations. This state can vary depending on the animal's perception of a given situation" (ANSES, 2018).

Historically, animal welfare research has primarily focused on welfare issues in contexts devoid of ecosystem interactions. Animal welfare research predominantly emphasised laboratory animals, livestock, zoo animals, and companion animals. Accustomed to working within human-controlled environments, animal welfare science may struggle to address how animals interact within ecosystems. This gap underscores the need for animal welfare research that considers the unique challenges and dynamics of urban ecosystems.

3.3. One Medicine, One Health, and One Welfare

The upsurge of the One-concept, such as One Medicine, One Health, and One Welfare at the beginning of the 21st century, illustrates the growing recognition of the interrelatedness and the interdependence of life on earth. These concepts are intended to integrate diverse perspectives and are sometimes understood as a holistic ideal of coexistence with and respect for all life on earth. Originating with Calvin Schwabe's concept of One Medicine, which bridged human and veterinary medicine, these ideas gained momentum following the H5N1 outbreaks and the articulation of One Health in the 2004 Manhattan Principles. Since then, One Health has been institutionalised by organisations such as WHO. While defined in various ways, the concept consistently highlights the inseparable relationship between humans, animals, and the environment and the need for interdisciplinary collaboration across local, national, and global levels. Figure 1 presents an adapted version of Lehmann's original "ego–eco" diagram, as modified by Rosén et al. (2022), to illustrate this shift.

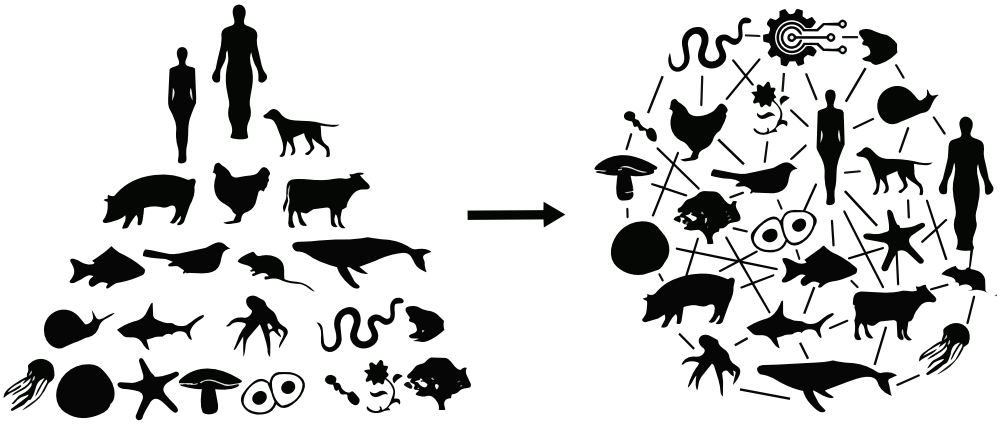

Figure 1. The move from human-centred design to more-than-human-centred design. Source: Figure adapted from Lehmann, as reproduced in Rosén et al. (2022).

One Welfare, advanced by Pinillos et al. (2016), extends One Health by linking animal welfare with human well-being and sustainability, stressing that improvements in animal welfare translate into broader societal and environmental benefits, and vice versa (Pinillos, 2018; Pinillos et al., 2016). This concept emphasises the importance of incorporating animal welfare science in transdisciplinary scientific collaboration and highlights the essential interconnection among diverse forms of life. As Yeates (2024) states:

> Animal behaviour and welfare research are part of a wider endeavour to optimize the health and wellbeing of humans, animals and ecosystems….These principles entail that animal behaviour and welfare research should be valued equitably alongside other research in transdisciplinary and multisectoral collaboration. It should include and promote a multiplicity of marginalized voices, including those of animals, and it should apply and describe a harmonious balance between human-animal-environment interactions. (p. 1)

While One Health emerged primarily from the fields of public health and veterinary medicine to address interconnected health risks between humans, animals, and ecosystems, One Welfare developed from animal welfare science and ethics to emphasise the interconnections between animal welfare, human wellbeing, and the environment; this distinction is particularly relevant in urban animal welfare, where animals may be physically healthy from a One Health perspective, yet still experience compromised welfare due to stress, unsuitable urban environments, social conflict, or inadequate human–animal interactions.

4. Conceptual Framework: Urban Animals

Urban animals can be classified into domestic, commensal/liminal, and wild (Donaldson & Kymlicka, 2011). Both domestic animals and commensal animals live in urban environments. The selected model species—cats, dogs, brown rats, black rats, house mice, foxes, pigeons—are prevalent in urban environments across Western European cities and present marked differences, as well as distinct challenges, in terms of urban coexistence and animal welfare. The critical distinction between those species lies in the fact that domestic animals have owners, whereas commensal animals do not. For this article, the definition of O'Connor (2013) is adhered to:

> Commensal is taken to refer to those animal species that utilize the modified or constructed environment of human habitations for living space and food….The key attribute is that habitats constructed or heavily modified by people either provide the majority of living space and substinence, or provide those resources at a critical point in the animals' lives, without which their populations would not be viable. (p. 8)

Wild animals may pass through or fly over urban areas, yet they do not rely on these environments in the same way as the domestic and commensal animals that inhabit them. Therefore, wild animals fall outside the scope of this article. The distinction between domestic, commensal, and wild is, however, not always clear-cut. These classifications are not fixed attributes of species, but rather historically contingent relationships that emerge between human and animal populations, such as the city pigeon, which is a descendant of the domesticated rock pigeon. Moreover, the very act of defining animals raises biopolitical challenges, as noted by Tian et al. (2023, p. 1): "The ways in which 'wildlife' and related terms are legally defined go beyond mere semantics; they are significant in shaping decisions, policies, and discourses."

4.1. Urban Domestic Animals

In Western European cities, cats and dogs are the most prevalent domestic animals, often considered companions and even family members (Sandøe et al., 2023). Urban governance of domestic cats and dogs varies across states, regions, cities, and municipalities.

4.1.1. Cats

The management of cats (*Felis sylvestris catus*) in urban space has garnered significant public and academic attention, particularly concerning issues related to stray cats (Vasileva & McCulloch, 2023). However, how cities deal with unowned free-roaming cats differs and is subject to public polarisation. These cats, either lost or abandoned domestic cats, or unowned litters, roam freely in urban areas and are often not neutered (De Ruyver, Hannes, et al., 2024). Some cities manage stray cats via TNR interventions, designating healthy but unsocialised cats as community cats cared for by certified caretakers, while socialised cats may be adopted through shelters, and stray cats in poor health may be euthanised. Views on stray animals reflect societal attitudes, legal frameworks, and ethical considerations (Jaroš, 2021). Changing attitudes towards stray animals stem from historical shifts in human–animal relationships that, since the 1950s, have driven their exclusion from cities and their framing as surplus populations or threats to human health and biodiversity. For example, ongoing debates around indoor-only cats focus on biodiversity protection while neglecting the welfare implications for cats themselves.

4.1.2. Dogs

Dogs (*Canis familiaris*) are among the most visible domestic animals in urban spaces. Urban dog-walking often provokes polarised reactions, with some residents advocating for more space for dogs and others expressing concerns about safety and injuries. As a result, dog behaviour and dog parks are frequent sources of governance questions and public debate. Dogs identified as prohibited types, such as in the UK's Dangerous Dogs Act of 1991, are still being debated, particularly regarding the effectiveness of breed-specific legislation in reducing dog attacks and improving public safety. Factors such as owner behaviour, training, socialisation, and environmental conditions are often predictors of aggression than breed alone. Although the importance of dog training in cities is widely acknowledged, both local governments and owners face structural challenges, including a shortage of dog training schools and off-leash zones. Urban living requires dog owners to reach a balance between discipline and freedom, enabling dogs to thrive within spatial and social constraints. This entails sustained investment in training and structure, alongside opportunities for exploration, socialisation, and physical activity. Shelter intake rates for dogs are high in urban areas, potentially reflecting unrealistic ownership expectations. Dogs can be simultaneously viewed as beloved companions and commercial commodities, a tension captured by Wolfe's (2012) characterisation of misbehaving or injured dogs as financial liabilities:

> If your dog is injured or misbehaving, it is a financial liability—it has a negative value because it will cost more to restore its health or retrain than it will cost you to simply replace it with a new companion animal. (p. 152)

4.2. Commensal Animals

Brown rats, black rats, mice, foxes, and pigeons have a long history of living with humans in urban areas, exemplifying the concept of commensalism (O'Connor, 2013). Commensal species occupy a precarious position in urban governance, as they are oftentimes framed as pests, legitimizing management practices that often entail significant animal suffering.

4.2.1. Brown Rats, Black Rats, and Mice

Brown rats (*Rattus norvegicus*), black rats (*Rattus rattus*), and mice (*Mus musculus*) are among the most common urban animals and frequently provoke negative public reactions. Their widespread portrayal as disease carriers reflects not only concerns about public health but also human sanitation practices that frame rodents as "out of place" in cities. Yet many nuisances attributed to rodents are based more on belief than empirical evidence (Delahaye, 2021). These representations shape the biopolitical framing of rats and mice and legitimise specific killing practices. Urban rodents are therefore widely perceived as legitimate for culling, and population control through poisoning—particularly the use of anticoagulants—remains common practice worldwide. Anticoagulant rodenticides cause severe internal bleeding and are associated with very poor welfare outcomes for all poisoned animals. In Western Europe, opposition to anticoagulants and glue boards is increasing, contributing to the acceptance of Integrated Pest Management (van Gerwen et al., 2024). Integrated pest management comprises successive phases—identifying potential pest species, determining nuisance or population thresholds, preventing and monitoring pest presence, and implementing control measures—with monitoring and prevention as core components.

Rats and mice are likely to remain permanent inhabitants of urban environments. Developing urban ecological strategies that combine historical insight with current scientific knowledge can support more effective planning and management (Guiry et al., 2024). Public outreach, particularly around waste management, will be increasingly important, as community practices strongly influence rodent habitats. Improved understanding of rodent ecology and welfare can further inform policies that promote coexistence. Some scholars even highlight rodents' functional roles as urban cleaners and ecological indicators, while citizen science initiatives, such as the Helsinki Urban Rat Project, demonstrate how research engagement can reduce negative public attitudes toward urban rodents (Aivelo & Huovelin, 2020; University of Helsinki, 2020).

4.2.2. Foxes

Foxes (*Vulpes vulpes*) are increasingly prevalent in Western European cities. The red fox can survive in urban environments while also exploiting anthropogenic food sources and shelter to its significant advantage. This has resulted in higher population densities than those found in natural conditions. Battermann (2021) observes that, unlike for rodents and pigeons, public attitudes toward foxes in the UK have become much more positive since 1950. Nevertheless, negative perceptions and conflicts persist, particularly when foxes are viewed as potential disease carriers or bold. Moreover, urban welfare issues, including intentional feeding, citizen-led culling, and mortality from traffic collisions, necessitate attention. Scholars argue that effective assessment of conflict risks and management strategies for urban foxes depends on a comprehensive understanding of their ecology. As with urban rodents, studying fox ecology and welfare helps us understand how we can coexist in cities.

4.2.3. Pigeons

Urban pigeons are domesticated rock pigeons (*Columba livia domestica*) that have subsequently rewilded and established themselves in cities. In contemporary urban contexts, pigeons are often portrayed as polluters of human spaces, and their removal has become a significant component of urban sanitation policies (Jerolmack, 2008). Public attitudes toward pigeons are largely negative, and population control through culling remains a common management practice. In response to these perceptions, Mosco (2021) authored *A Pocket Guide to Pigeon Watching: Getting to Know the World's Most Misunderstood Bird*, which seeks to challenge prevailing negative views of pigeons in urban environments. Mosco frames pigeons as a flagship species for promoting awareness of urban biodiversity and fostering biophilia. In recent years, urban governments have increasingly explored more humane approaches to pigeon population management. These strategies typically include limiting intentional feeding and installing deterrent devices, such as bird spikes, to reduce pigeon densities in specific areas. At the same time, pigeons are themselves exposed to a range of anthropogenic hazards, including malnutrition, toe mutilation, and others. Against this backdrop of evolving management practices and contested public attitudes, issues of governance, public communication, and animal welfare in relation to urban pigeon management have become matters of increasing concern for cities.

5. Urban Animal Governance in Practice: Empirical Insights From the Belgian Case

5.1. The Case of Belgium

Belgium is a federal constitutional monarchy within the European Union, composed of three regions—the Brussels Capital Region (BCR), Flanders, and Wallonia—each with its own government, parliament, and administrative competences. These regions enjoy substantial autonomy in several policy domains, including animal welfare, making Belgium the first EU member state to appoint regional ministers specifically responsible for animal welfare (Hus & McCulloch, 2023). The progressive institutionalisation of animal welfare is further reinforced by the constitutional recognition of animals as sentient beings on 2 May 2024, through the addition of a paragraph 7bis to Article 7 of the Constitution, which obliges the Federal State, Communities, and Regions to ensure the protection and welfare of animals within their respective competences. This constitutional change is expected to shape policy development across all levels of governance. At the same time, Belgium's highly urbanised context presents distinct challenges for animal welfare governance: since the 1970s, major land-use changes in Flanders and the BCR have involved the large-scale conversion of arable land and grassland into built-up areas, placing these regions among the most urbanised in Europe. The combination of rising animal welfare governance structures and intense urbanisation makes Belgium a particularly relevant case for examining urban animal welfare, as densely populated and rapidly transforming cities generate specific human–animal relations and welfare concerns.

5.2. Urban Animal Governance

Animal-related governance in Belgian cities is driven by a plurality of policy domains and levels and rationales that reflect differing biopolitical frameworks.

5.2.1. Domestic Animals: Cats and Dogs

Animal welfare legislation in the three regions sets out obligations for domestic animal owners, including requirements related to appropriate feeding, housing, and overall care of animals. A key component is the mandatory microchipping and registration of cats and dogs in the national databases DogID and CatID, which facilitates identification and the efficient return of lost animals to their owners. Some cities impose limits on the number of domestic animals an individual may keep; while these restrictions are primarily motivated by environmental considerations, they also contribute to the prevention of animal hoarding and the improvement of domestic animal welfare.

All cities implement regulations requiring dogs to be leashed in public spaces, based on the public health concern related to dog injuries and human health. The establishment of designated dog areas where they can run off leash indicates growing attention to animal welfare. However, these zones are mostly designed from a human-centred perspective. For example, off-leash zones for dogs are not evaluated in terms of dogs' stress levels, intradog and extradog dynamics, or behavioural needs. High rental costs for dog training grounds, growing dog populations, and increasing competition over public space further complicate the urban dog-human coexistence. The absence of free-roaming dog populations in Belgium eliminates many of the management challenges typically associated with stray dogs.

Mandatory neutering policies for domestic cats are implemented across all three regions, alongside management measures targeting stray cat populations (De Ruyver, Hannes, et al., 2024). The recent provisions in Flemish animal welfare legislation concerning stray cat welfare assign explicit responsibility to municipalities for the management of stray cats within their jurisdictions (see Flemish Government, 2024). This legislative development has been positively received by citizens (De Ruyver et al., 2021). By contrast, regulatory frameworks in the BCR differentiate between stray and domestic cats based on their relationship with humans, resulting in a division of responsibility between the environmental and animal-welfare policy domains. This has resulted in negative welfare outcomes for stray cats, despite substantial efforts by NGOs to address the issue (De Ruyver, Hannes, et al., 2024).

The management of domestic animals in urban space in Belgium reflects evolving governance structures, characterised by differing governance rationales and degrees of institutional inclusion. While policies for managing dogs in urban space are in place, they insufficiently account for dogs' welfare, and the governance of cats as domestic, colony, or stray leads to varying welfare outcomes. These examples underscore the importance of incorporating urban animal welfare knowledge, and thus animal perspectives, into urban animal governance

5.2.2. Commensal Animals: Rodents, Foxes, and Pigeons

Although debates on humane rodent management are ongoing in the three regions and cities, the rodent control methods currently permitted under Belgian law have significant negative welfare consequences for animals, humans, and the environment, as demonstrated by De Ruyver et al. (2023). Their study shows that rodents are not afforded protection based on their sentience, nor are the harmful effects of anticoagulant rodenticides on human health and the environment adequately considered. The prevailing public health rationale thus overlooks broader impacts from a One Welfare perspective. Integrated Pest Management

provides a more humane and effective alternative when explicit animal welfare criteria are incorporated. However, the absence of binding welfare standards for control methods, combined with limited public awareness, currently constrains its potential.

Foxes, although unprotected in Flanders and Wallonia, are subject to fluctuating levels of public tolerance. Only in the BCR are foxes a legally protected species, enabling their continued coexistence with citizens (De Ruyver, Hannes, et al., 2024). Foxes, as native mammals, have been under strict protection in the BCR since 1991, prohibiting hunting, den destruction (particularly during breeding seasons), and feeding. Nonetheless, citizen practices such as feeding or disturbing dens and corridors may undermine fox welfare and lead to arbitrary domination (Altrudi & Kelty, 2022). While some residents intentionally feed foxes to encourage proximity and visibility, others cull them, exposing foxes to heightened welfare risks.

Despite their historical and cultural significance in Belgium, rooted in long-standing domestication, wartime communication, and racing traditions, pigeons do not benefit from any legal welfare protection. Across Flanders and Wallonia, explicit policies addressing their welfare have so far been absent; moreover, many Belgian cities have introduced feeding bans for pigeons. Only in the BCR, the capture and killing of pigeons was prohibited by the Ordonnance of 10 February 2022 because such practices are cruel, inefficient, and costly. As aerial animals that do not conform to legal territorial boundaries, pigeons fall into a governance gap in which responsibility for their welfare remains diffuse within the Belgian institutional context (De Ruyver, Hannes, et al., 2024).

In conclusion, the five commensal species examined in this study are subject to fewer governance frameworks than domestic animals and, in the case of rodents, to no welfare-driven policy at all.

5.3. Governance and Knowledge

5.3.1. Institutional Fragmentation

In Belgian cities, governance of cats, dogs, rodents, foxes, and pigeons is marked by institutional fragmentation, as responsibilities impacting urban animals are distributed across multiple policy domains—such as animal welfare, environmental protection, biodiversity, and public health—each operating with distinct rationales, legal instruments, and administrative actors (De Ruyver, Hannes, et al., 2024). Consequently, welfare outcomes are shaped less by a coherent urban animal welfare policy vision than by the interaction of disconnected institutional mandates, producing governance gaps and uneven forms of welfare inclusion for different species. This underscores the importance of institutionalising cross-sectoral collaboration informed by urban animal welfare science. It also emphasises the need to engage the abovementioned policy domains in the design and implementation of urban animal public-space interventions, as animal welfare outcomes depend on such collaboration.

5.3.2. The Role of Local Governance

In Belgium, urban animal governance is shaped by a multi-level regulatory framework in which municipal, regional, and federal authorities each exercise distinct competencies. Federal regulations, such as those governing the use of biocides (cf. anticoagulantia), exert significant influence on the welfare of rodents and

non-target species. While animal welfare legislation is a regional responsibility, cities and municipalities are charged with enforcing these norms and addressing species-specific challenges within their jurisdictions. Moreover, research demonstrates that public acceptance of urban cat management strategies varies according to demographic characteristics, area of residence, and cultural values (De Ruyver et al., 2021). Therefore, cities play a crucial role in shaping animal welfare outcomes, as municipal authorities are tasked with implementing higher-level legislation while responding to local ecological conditions and citizen attitudes.

5.3.3. Knowledge Gaps and Capacity Building

A key barrier was the lack of animal welfare knowledge among policymakers, enforcement officers, and citizens (De Ruyver, Hannes, et al., 2024). Animal welfare legislation at the regional level is relatively recent (approximately a decade old), necessitating adequate information and training for policymakers, enforcement officers, and citizens. Moreover, animal welfare regulations are often formulated in vague prescriptive terms. They frequently rely on the assumption that trained officers can assess welfare on a case-by-case basis through the application of general principles. This may entail risks of inconsistent enforcement and unequal welfare outcomes. Educational initiatives, training programs, and public outreach—such as exhibitions on urban rodents—demonstrate potential for levering knowledge, reshaping perceptions, and behaviours. These interventions contribute to shifting narratives from eradication to coexistence (De Ruyver, Hannes, et al., 2024).

6. Reconfiguring Urban Animal Governance: Multispecies Cities and the One Welfare Paradigm

To date, studies on the integration of animal welfare science into governance have primarily focused on the political and legislative dimensions of animal welfare, while paying limited attention to the uptake and use of animal welfare science within urban animal governance. This makes the present contribution particularly relevant. As noted by Mitchell (2025), the integration of scientific evidence in urban animal governance remains uneven, as policy outcomes are shaped not only by evidence but also by political priorities, advocacy groups, public opinion, administrative capacity, and moral values.

Drawing on the One Welfare framework and on illustrative empirical insights from Belgian cities, the analysis shows that urban animal governance remains predominantly organised around human-centred priorities and fragmented institutional mandates. As a result, animal welfare is unevenly recognised across species and weakly integrated into governance practices, especially where animals are framed as nuisances or fall between policy domains.

6.1. Core Governance Tensions Emerging From the Belgian Case

Across the governance of domestic animals (cats and dogs) and commensal animals (rodents, foxes, pigeons), three interrelated tensions are particularly important.

First, our findings point to unequal inclusion of animal welfare for the different animal species. Domestic animals are governed through explicit welfare-oriented legislation that assigns responsibilities to owners and defines minimum care requirements, while commensal species are commonly governed through nuisance,

sanitation, biodiversity, or public health rationales. This difference produces substantially different welfare outcomes. For cats and dogs, governance instruments exist that can—at least in principle—be evaluated and improved in welfare terms (e.g., off-leash zones, stray cat management). For commensal animals, by contrast, welfare is often not the primary evaluative criterion at all, despite the fact that governance practices can entail significant suffering (e.g., anticoagulant rodenticides; see De Ruyver et al., 2023). Pigeons illustrate how welfare may be structurally neglected when animals do not fit clearly within existing legal and territorial arrangements, resulting in diffuse responsibility (De Ruyver, Hannes, et al., 2024).

Second, institutional fragmentation is a constitutive yet problematic feature of urban animal governance. Responsibilities shaping animal welfare outcomes are distributed across policy domains and levels—animal welfare, public health, biodiversity, environmental protection, municipalities, regions, and federal regulation. These mandates carry distinct rationales and often operate without systematic coordination (De Ruyver, Hannes, et al., 2024). Consequently, welfare outcomes are shaped less by a coherent vision of urban animal welfare than by the interaction of disconnected governance logics, producing gaps and inconsistencies.

Third, the empirical material shows that governance interventions tend to be reactive to human perceptions of animals and the conflicts they experience, rather than being anchored in species-specific and individual welfare needs. For example, dog governance in public space is typically justified through public safety concerns, while spatial interventions such as off-leash zones are rarely evaluated in relation to dogs' stress, behavioural needs, or social dynamics. For commensal species, representations as disease carriers or polluters legitimise eradication-oriented responses even where nuisances are partially rooted in belief, stigma, or sanitation practices (Delahaye, 2021; Jerolmack, 2008). These patterns exemplify the biopolitical character of urban animal governance: Decisions about which lives are protected, tolerated, controlled, or eliminated are shaped by classification, legitimacy, and thresholds of acceptability (Tian et al., 2023).

6.2. Interpreting the Findings Through a One Welfare Framework

Situated within One Welfare, these tensions are not merely administrative or technical problems; they reflect a deeper challenge of governing interdependent welfare relations across humans, animals, and urban ecosystems. One Welfare means that animal welfare, human wellbeing, and environmental sustainability are interconnected (Pinillos, 2018; Pinillos et al., 2016). The Belgian case illustrates how governance frequently treats these domains as separate responsibilities. Rodent control through anticoagulants, for example, is justified primarily through public health or sanitation logics, while welfare harms and broader environmental impacts remain insufficiently integrated into governance (De Ruyver et al., 2023). Similarly, feeding bans, deterrence infrastructures, and lethal control practices often prioritise human comfort and urban cleanliness without systematic consideration of how animals experience and adapt to urban conditions.

This underscores the article's central claim that animal welfare must be understood as a constitutive element of urban governance rather than a secondary concern. welfare cannot be added afterward as an extra consideration but must serve as a core principle for assessing trade-offs, designing interventions, and coordinating policy areas. At the same time, the analysis aligns with existing critiques that One-concepts risk being interpreted through anthropocentric self-protection rationales (Capps, 2024; Lerner & Berg, 2017), with human-oriented priorities dominating research and governance (Rai et al., 2024; Rodriguez, 2024). The Belgian case demonstrates precisely how such anthropocentric slippage occurs in practice: Welfare

becomes more robust where animals are owned and socially valued, and becomes marginal where animals are framed as surplus populations, pests, or ecological threats. A One Welfare interpretation, therefore, strengthens the argument for developing governance approaches that explicitly resist this by institutionalising welfare considerations across species categories and policy domains.

6.3. Multispecies Cities as a Relational Concept

In this article, the concept of multispecies cities is not proposed as a descriptive claim that cities already function inclusively for all beings, but as a governance framework that operationalises the relational commitments underlying One Welfare and beyond-anthropocentric ontologies (Franklin, 2017; Houston et al., 2018). It offers a way to organise the empirical findings into a coherent direction for "what next" by providing a relational guide for how humans ought to govern the shared conditions of urban life.

A multispecies cities perspective has three implications that directly respond to the empirical tensions identified above.

First, it reframes inclusivity as relational and situated, rather than as an abstract universal ideal. In urban contexts, animals' dependence on human-modified habitats varies by species and by individual life histories, which generates different forms of responsibility. While responsibility is direct and legally codified for domestic animals, the governance of commensal species raises indirect obligations precisely because their populations depend on anthropogenic infrastructure, food systems, and spatial constraints (O'Connor, 2013). Recognising these relations does not erase conflict, but it shifts the question from whether animals "belong" to how shared urban systems can be governed to reduce harm and enable welfare.

Second, multispecies cities provide a way to reinterpret the biopolitical framing of "legitimate" versus "problem" animals (Jerolmack, 2008) by making visible how these classifications are produced through governance and discourse rather than by animals' needs. This matters because it exposes the normative stakes of policy choices. If the category "nuisance" functions as a shorthand that suspends welfare evaluation, moving toward One Welfare requires undoing that suspension. It also requires reintroducing welfare as an explicit criterion, even in conflict governance.

Third, multispecies cities underscore our core argument about knowledge and capacity. If cities are shared socio-ecological spaces in which animals are active agents shaping and being shaped by urban infrastructures, then governance requires species-specific and context-specific welfare knowledge. This aligns with the observation that animal welfare science historically developed in controlled environments and may struggle to address welfare in ecosystems and dynamic urban contexts. The Belgian case illustrates the practical consequence: Vague welfare norms and limited training produce uneven enforcement and inconsistent outcomes. A multispecies approach, therefore, demands urban-specific animal welfare science capable of assessing how animals experience urban environments and how governance interventions shape welfare over time (ANSES, 2018; Arndt et al., 2022; Mellor, 2017).

The concept of multispecies cities raises another question—one that could be addressed in a separate paper; namely, whether genuinely greener cities can be realised when animals remain overlooked, excluded from, or problematised within urban governance (Konijnendijk, 2023). Urban greening initiatives will inevitably attract

new and different commensal species. Their presence raises a broader question about how greener cities can be pursued through more inclusive modes of governance. In this context, the One Welfare framework provides a useful conceptual lens for seeing urban greening as a multispecies project.

6.4. Governance Implications: Moving Beyond Fragmentation and Reactivity

Drawing on the empirical findings and the multispecies One Welfare framing, the article outlines governance-oriented implications.

Institutional coordination and responsibility are key in the governance of urban animal welfare. The Belgian case shows that fragmentation is not incidental but systemic. A One Welfare approach implies that cross-domain collaboration is not optional: It is required for welfare-relevant decisions that currently fall between animal welfare, environment, biodiversity, and public health (De Ruyver, Hannes, et al., 2024). For cities, this means recognising urban animal governance as a shared responsibility spanning multiple mandates and designing coordination mechanisms capable of aligning trade-off evaluation across domains.

Welfare assessments need to be incorporated as an evaluative criterion in urban interventions. For domestic animals, existing initiatives—such as off-leash zones and stray cat management—should be evaluated against animals' welfare needs rather than only human convenience or risk minimisation. For commensal species, the key shift is to treat welfare not as irrelevant but as part of the governance calculus, particularly where management methods entail severe welfare harms (De Ruyver et al., 2023). Integrated Pest Management demonstrates the possibility of governance strategies that can combine effectiveness with improved welfare outcomes when welfare criteria are explicitly incorporated.

Capacity building and public communication are essential components of urban animal welfare governance. The knowledge gaps identified in Belgian cities indicate that welfare-oriented governance depends on informing and training policymakers, enforcement officers, and citizens. Educational initiatives can reshape perceptions and behaviours, contributing to a shift from eradication narratives to coexistence-oriented approaches (De Ruyver, Moons, et al., 2024). A multispecies framing strengthens the rationale for such initiatives by promoting a broader reorientation towards the inclusion of multiple species in the ways cities conceptualise and govern shared urban life.

Urban animal governance is embedded in broader political dynamics, in which NGOs and animal welfare advocacy groups play important roles. However, this study focused specifically on the role and uptake of animal welfare science in urban governance, rather than on stakeholder or political analysis. Future research could therefore examine the perspectives, strategies, and governance roles of NGOs and advocacy groups in shaping urban animal welfare policy.

7. Conclusion

This article argued that animal welfare science should be understood as a constitutive element of urban governance rather than a secondary concern. Drawing on the One Welfare framework and empirical insights from Belgian cities, the analysis showed that urban animal welfare remains unevenly recognised and weakly integrated into governance practices, with substantial differences between the governance of domestic

animals (cats and dogs) and commensal species (rodents, foxes, pigeons). These differences are shaped by species-based inclusion and exclusion mechanisms, by institutional fragmentation across policy domains and governance levels, and by governance approaches that remain predominantly human-centred.

Achieving One Welfare in urban contexts requires more than isolated welfare interventions. Urban animal governance depends on coordinated, knowledge-driven approaches that embed animal welfare science into governance and planning as a foundational lens for evaluating trade-offs and shaping multispecies coexistence in cities—benefiting both animals and human urban dwellers alike. Such an approach calls for a relational and compassionate mode of governance that recognises humans and other animals as interdependent participants in shared urban ecosystems. In response, this article advanced the concept of multispecies cities as a governance framework that operationalises the relational commitments of One Welfare and offers a way to rethink how cities distribute recognition, protection, and responsibility across species.

Conflict of Interests

In this article, editorial decisions were undertaken by Ulf R. Hedetoft (University of Copenhagen).

LLMs Disclosure

The authors used artificial intelligence (AI)-assisted (ChatGPT and Claude) language editing tools exclusively for proofreading and improving the clarity of the English text. All intellectual content, interpretations, analyses, and conclusions remain entirely the responsibility of the authors.

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