Basic and Applied Ecology 79 (2024) 90–101

Contents lists available at ScienceDirect

Basic and Applied Ecology

journal homepage: www.elsevier.com/locate/baae

RESEARCH PAPER

Mammal Mia: A review on how ecological and human dimension research on urban wild mammals can benefit future biophilic cities

Simon S. Moesch [a,b,c,d,*], Thilo Wellmann [a], Dagmar Haase [a,e], Manisha Bhardwaj [d]

[a] Humboldt-Universität zu Berlin, Geographisches Institut, Rudower Chaussee 16, 12489 Berlin, Germany
[b] Freie Universität Berlin, Institut für Biologie, Königin-Luise-Str. 1-3, 14195 Berlin, Germany
[c] Leibniz Institute for Zoo and Wildlife Research (IZW), Department of Ecological Dynamics, Alfred-Kowalke-Str. 17, 10315 Berlin, Germany
[d] Albert-Ludwigs-Universität Freiburg, Wildlife Ecology and Management, Tennenbacher Str. 4, 79106 Freiburg, Germany
[e] Helmholtz Centre for Environmental Research – UFZ, Department of Computational Landscape Ecology, Permoser Str. 15, 04318 Leipzig, Germany

ARTICLE INFO

Keywords:
Urban wildlife
Urban ecology
Wild mammals
Literature review
Future cities
Human dimensions of wildlife
Wildlife ecology

ABSTRACT

Future cities have the potential to be biodiverse areas in which humans and wildlife can coexist. However, the success of creating or maintaining wildlife-inclusive future cities can be challenged by management actions that are solely based on ecological research, while overlooking research on human perspectives. Despite the growth of literature on human-wildlife interactions, which complements the breadth of urban ecology research, the overlap between these two research areas is still uncommon. In this study, we reviewed the literature of wild mammals in urban areas to identify patterns and gaps in the literature. We found 848 published journal articles, of which 480 articles focused on wildlife ecology, 269 articles focused on human dimensions and 99 articles had interdisciplinary combinations of both. Ecology-centered publications tended to be about habitat, rather than behavior, diet, health, reproduction and inter-species-relations, and literature on human dimensions was more evenly divided into management, perception, conflict and coexistence. Most ecology studies reported on specific taxonomic families, mainly canids and murids, but in human-dimension studies, "wildlife" was considered more as a general community of species. The most studied interdisciplinary combination of research themes was wildlife habitat and human-wildlife conflicts (n = 22), while only nine studies incorporated perception with ecological research. Even though studies on human dimensions of wildlife in cities are increasing, interdisciplinary research is lacking, which limits the knowledge on how to manage and shape urban areas to achieve coexistence of humans and wild mammals. For future cities to successfully become biophilic and support human-wildlife coexistence, we outlined five key elements for a research agenda: 1) Investigate urban mammal research through an interdisciplinary lens; 2) Explore ecological dynamics beyond habitat selection; 3) Conduct research for coexistence; 4) Disentangle what is "urban wildlife"; 5) Study a diverse array of urban wild mammals.

Introduction

Future cities have the potential to be biodiverse areas in which humans and wildlife can coexist (Breuste, 2022; Rega-Brodsky et al., 2022). Cities can support dense human populations while also maintaining biodiversity (McDonald et al., 2023; Wellmann et al., 2020), particularly when urban residents are inclined to incorporate more wild and green spaces within urban environments (Kowarik, 2018). Urban green spaces provide wellbeing (Carrus et al., 2015) and health benefits (Gillis & Gatersleben, 2015) to humans, contribute to urban cooling (Bowler et al., 2010), while concurrently creating habitat for wildlife species (Gallo et al., 2017; Hunold, 2020) by providing resources such as shelter and food (e.g., Lowry et al., 2013). Even though wildlife can adapt to urban areas (Santini et al., 2019; van Patter, 2021), they are often regarded as problematic for humans (Basak et al., 2022; Hadidian, 2015), because of their involvement in conflicts such as injuries and threat to health (e.g., Bridge & Harris, 2020), or property damage (e.g., Herr et al., 2009). To mitigate conflicts between urban wildlife and humans, it is imperative to design urban spaces in a manner that foster coexistence (Garrard et al., 2018; Houston et al., 2018).

Urban planning tends to prioritize human needs (Kay et al., 2021), often overlooking the potential benefits of biodiversity, and instead perceiving it as a hindrance (Bekessy et al., 2012). Where ecological diversity is recognized to be beneficial, biodiversity tends to be

* Corresponding author.
E-mail address: simon.moesch@geo.hu-berlin.de (S.S. Moesch).

https://doi.org/10.1016/j.baae.2024.05.004
Received 30 November 2023; Received in revised form 22 May 2024; Accepted 23 May 2024
Available online 27 May 2024

exploited primarily for green gentrification, i.e., using green spaces and environmental improvements to attract wealthier residents and drive up property values (Haase et al., 2017; Rigolon & Collins, 2023). Examples of wildlife-inclusive urban planning for the benefit of wild species such as Shaw et al. (2009) or Weisser and Hauck (2017) are scarce. Creating urban spaces that foster coexistence requires the understanding of both, humans and wildlife. The study of urban wildlife, emerging in the 1970s, focussed mainly on ecological aspects such as habitat selection, reproduction, health, behavior, and foraging within urban settings (Adams, 2005; Magle et al., 2012). While understanding ecological aspects of wildlife in urban settings is crucial (e.g., Beliniak et al., 2022; Maclagan et al., 2020), achieving successful biophilic future cities (see Beatley, 2011) also needs investigation of social considerations regarding wildlife (Soulsbury & White, 2015), for instance, on how humans perceive and accept wildlife (e.g., Rupprecht, 2017). Studies in this realm belong to the research field of human dimensions of wildlife, which emerged in the 1990s (Bath, 1998; Manfredo & Vaske, 1996). Within publications centered on human dimensions of wildlife the terms “management”, “perception”, “conflicts” and “coexistence” play crucial roles. “Management” involves scientifically driven strategies to regulate human-wildlife interactions, ensuring benefits for both humans and wildlife in urban areas (Adams, 2009; Lunney & Burgin, 2004). Research on "perception" focusses on examining human attitudes towards wildlife and acceptance of management actions (e.g. Drake et al., 2020). Publications centered on “conflicts” tend to describe the threats urban wildlife has on human safety, health and property (Harris et al., 2023; Soulsbury & White, 2015). “Coexistence” is understood as the dynamic yet stable condition in which both humans and wildlife mutually adjust to inhabiting shared environments (König et al., 2020; Carter & Linnell, 2016). Studies on coexistence tend to describe ways to overcome conflicts and implement wildlife-inclusive habitats or constructions (Garrard et al., 2018; Houston et al., 2018). Research on human dimensions of wildlife and on ecological themes have emerged separate from each other, but combining both investigations– human and wildlife’s perspectives – within research are crucial to give guidance for planners towards creating spaces for coexistence (Kay et al., 2021; Steiner et al., 2013).

Despite the recognition that biophilic cities require research in human dimensions of wildlife in urban areas and urban ecology, the extent to which these two themes are considered together is unclear. Past reviews have investigated urban wildlife (see Adams, 2005; Basak et al., 2023; Collins et al., 2021; Magle et al., 2012), however they lack comparison between wildlife ecology and human dimensions of wildlife as well as an exploration of taxonomic families. To give guidance for future research enabling the creation of biophilic cities, we need to unravel where past urban wildlife research laid its focus. We therefore conducted a literature review to explore the development of urban ecology through the lenses of wildlife ecology, human dimensions of wildlife, and interdisciplinary studies (Aim I). Further, we aim to explore the taxonomic foci of urban wildlife research, to understand the motivations and aims underlying the current literature (Aim II). We use the findings to define past patterns in urban wildlife research and identify gaps to be addressed within future research, ultimately proposing a research agenda to foster coexistence spaces within urban environments.

Materials and methods

Focus on urban wild mammals

Urban wildlife adapts well to human-dominated urban areas (Santini et al., 2019; van Patter, 2021). Humans tend to care for wildlife due to their charismatic appeal (Entwistle & Dunstone, 2000), but conflicts emerge when wildlife select human-centered urban green spaces, like gardens and parks, as habitat (Gallo et al., 2017; Grade et al., 2022). This is particularly true for urban mammals, that are frequently associated with both human conflicts and use of urban spaces (Basak et al., 2022; Hadidian, 2015). For example, mammals like black bears (*Ursus americanus*) are often seen as a source of conflict in urban areas, while red squirrels (*Sciurus vulgaris*) are desired in urban gardens (Perry et al., 2020; Rupprecht, 2017). Further, the general public tends to be familiar with common wild mammal species (Sweet et al., 2023) and wild mammals are often regarded as the flagship species for urban wildlife (Egerer & Buchholz, 2021). This polarizing view of urban mammals suggests that by investigating urban mammal research and designing cities for the inclusion of mammals, managers may be able to address many of the current limitations to developing wildlife-inclusive, biophilic future cities. In this review, we focus on literature on urban mammals, and henceforth we use “wild mammals” interchangeably with “wildlife” (unless otherwise specified).

Literature search

To investigate the current state of research focussing on wildlife in urban areas, we conducted a systematic review of the existing peer-reviewed literature, published up to and including June 2023, in English, in international academic journals. We followed the PRISMA protocol (Moher et al., 2015) and searched the Scopus database (www.scopus.com) for articles about “urban” and “wildlife”, which included these terms, and their synonyms (e.g., “residential”, “city”, “mammal”) in the abstract, title or keywords (see search string in Appendix A: Table 1). To reduce the number of papers about pets, we avoided “urban” plus “animal” and added “wild animals”. Additionally, instead of an “AND”-combination, we used “W/5″ to search a five-word radius to match both terms, and to avoid results where “urban” and “wildlife” are not core items of papers, e.g., papers addressing urban air quality beneficial for humans and wildlife. Since we were only focusing on wild urban mammals, such as red foxes (*Vulpes vulpes*) and red squirrels (*Sciurus vulgaris*), publications on other species were omitted (see Appendix A: Table 2). All abstracts from the initial search result were screened and non-thematic articles, e.g., those focussing on non-wild mammals like feral cats, and inaccessible articles were omitted (see full exclusion criteria in Appendix A: Table 2). From all remaining articles, we extracted data on the details and content of the studies: country and continent where the study had been conducted (study area); year the study was published; main research focus incl. sub-categories; and the taxonomic family.

Categorisation

We categorized the main research focus as “Wildlife ecology and behavior” (WEB), “Human dimensions of wildlife” (HDW), or both (WEB + HDW) according to ten classification criteria (Table 1). WEB papers typically included ecological topics such as habitat, diet, behavior, population, health and inter-species relations, while HDW papers typically covered wildlife management, human perception of wildlife, human-wildlife coexistence, and human-wildlife conflict. For WEB, we adapted the categorization defined by Magle et al. (2012) and expanded the behavior category to include movement (habitat), foraging behavior (diet), reproduction (population), while retaining all other related aspects within the behavior category. We also added a category of inter-species relations to accommodate papers that explored relationships spanning from competition to predation among mammals and one or more non-human species, as they did not align with existing categories. For HDW, we combined the criteria of classifications for papers considered “management” according to Magle et al. (2012), with the criteria for “conflict” and “coexistence” from Soulsbury and White (2015), and “perceptions” of wildlife defined by Basak et al. (2023). We made one exception: unlike Soulsbury and White (2015) who addressed wildlife disease as a conflict (and thus part of “HDW”), we categorized papers on wildlife disease as a WEB papers, given their focus was on wildlife fitness. Finally, we categorized all mentioned study species into

Table 1
Main and sub-categories for article categorization. During the screening process, scientific articles about urban mammals were categorized into one or up to three of our created sub-categories: habitat, diet, behavior, population, health, and inter-species relations sorted into the main category of Wildlife Ecology and Behavior (WEB), and management, perception, coexistence, and conflict sorted into the main category of Human Dimensions of Wildlife (HDW). Articles classified within a sub-category of WEB and a sub-category of HDW were categorized in the main category of "Both (WEB + HDW)". The ten sub-categorizations were inspired by previous reviews by Magle et al. (2012), Basak et al. (2023), and Soulsbury and White (2015).

Main categories	Sub-categories	The aim of the research article was…
Wildlife ecology & behavior (WEB)	Habitat-related	… to analyze the habitat, density, movement patterns, movement behavior, land use or distribution of wildlife; … to analyze species richness or community structures in given habitats.
	Diet-related	… to analyze the diet, food availability, food resource use, foraging behavior of wild mammals.
	Behavior-related	… to analyze individual behavior, e.g., nocturnal or diurnal activity, human avoidance; … to analyze individual personality e.g., boldness, shyness but not reproduction-related, diet-related or movement-related behavior.
	Population-related	… to investigate reproduction, mating, offspring, demographic patterns, community, nesting, etc. of wildlife populations, … to describe or analyze differences or patterns related to wildlife's phenotypes or genetics.
	Health-related	… to investigate animal health, stress, welfare, illnesses, mortality, wellbeing, survival, infection with pollutants, parasites, etc.
	Inter-species-relations	… to investigate predation, competition, ecological relationships between non-human species, but excluding parasitism.
Human dimensions of wildlife (HDW)	Management-related	… to investigate wildlife management or policies, e.g., regarding hunting, trapping, relocating, fertility control, with the goals of mitigation or conservation, restoration, rewilding, and/or protection.
	Perception-related	… to investigate human-wildlife perception, values, believes, awareness or knowledge about wildlife, attitudes towards wildlife or wildlife appreciation as well as acceptance to wildlife management.
	Coexistence-related	… to investigate means of creating or maintaining human-wildlife-coexistence or biophilic cities, such as wildlife crossing structures across roads, greenspace planning, wildlife gardening, green corridors, green roofs, greenbelt creation, creation of restoration or conservation areas within cities.
	Conflict-related	… to investigate human-wildlife-conflicts, e.g., risk of damage to public or private property, risk to human health and safety and fear of wildlife Note: Studies on wildlife health, habitat occupation, diet, behavior were excluded, if studies did not directly address them as conflict for humans with certain examples.
Both (WEB+HDW)		… to connect HDW and WEB topics; e.g., Habitat-related plus perception-related studies which combine wildlife habitat in urban areas with the perception, attitudes or beliefs of humans towards wildlife.

their respective families; e.g. red fox (*V. vulpes)* and coyotes (*Canis latrans*) were grouped under "Canidae," while studies without species specifications were categorized as "Wildlife in general." When encountering papers dealing with taxa aggregated in higher taxonomic categories, such as "bats" within the order Chiroptera, we classified the family through examination of all species documented within the paper.

Validation

To validate our categorization, a second researcher independently assessed and categorized 50 randomly selected entries within our included literature (Templier & Pare, 2015). According to the Cohen Kappa statistic, both evaluators had an average agreement of 0.82, indicating substantial to nearly perfect agreement (Higgins & Green, 2008; Templier & Pare, 2015), and a consistent categorization of the literature.

Results

General findings

We collected 1436 articles in the initial Scopus search (see Appendix B), and excluded 588 articles which did not meet the inclusion criteria (Fig. 1; see full details on exclusion criteria in Appendix A: Table 2). We extracted data from 848 articles in this systematic review (see Appendix C).

The first article on wild mammals in urban areas was published in the 1970s (Scarbrough et al., 1972), and the number of publications increased rapidly, especially since 2010 (Fig. 2). Articles were published in Urban Ecosystems ($n = 58$), Landscape and Urban Planning ($n = 33$), Wildlife Society Bulletin ($n = 22$), Human Dimensions of Wildlife ($n = 20$), Journal of Wildlife Management ($n = 18$), Animals ($n = 17$) and PLOS ONE ($n = 15$) (see Appendix A: Table 3). Most studies were

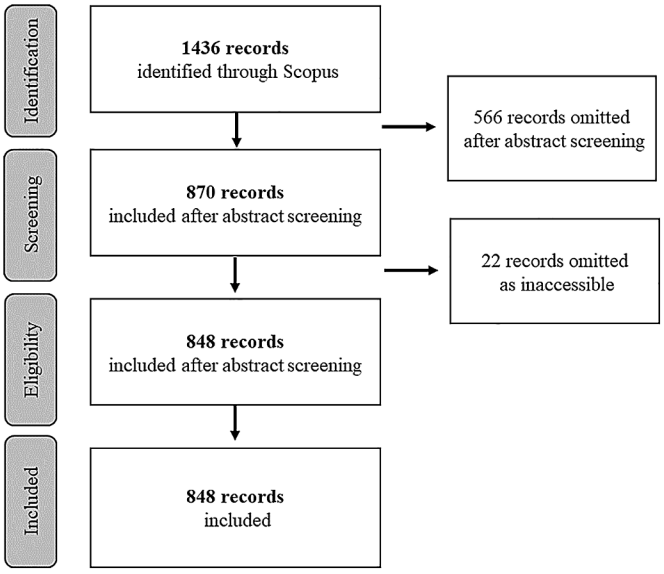

Fig. 1. Workflow of the literature review following the PRISMA Protocol. The total number of records identified through a Scopus literature search was 1436, of which 848 were included in the analysis.

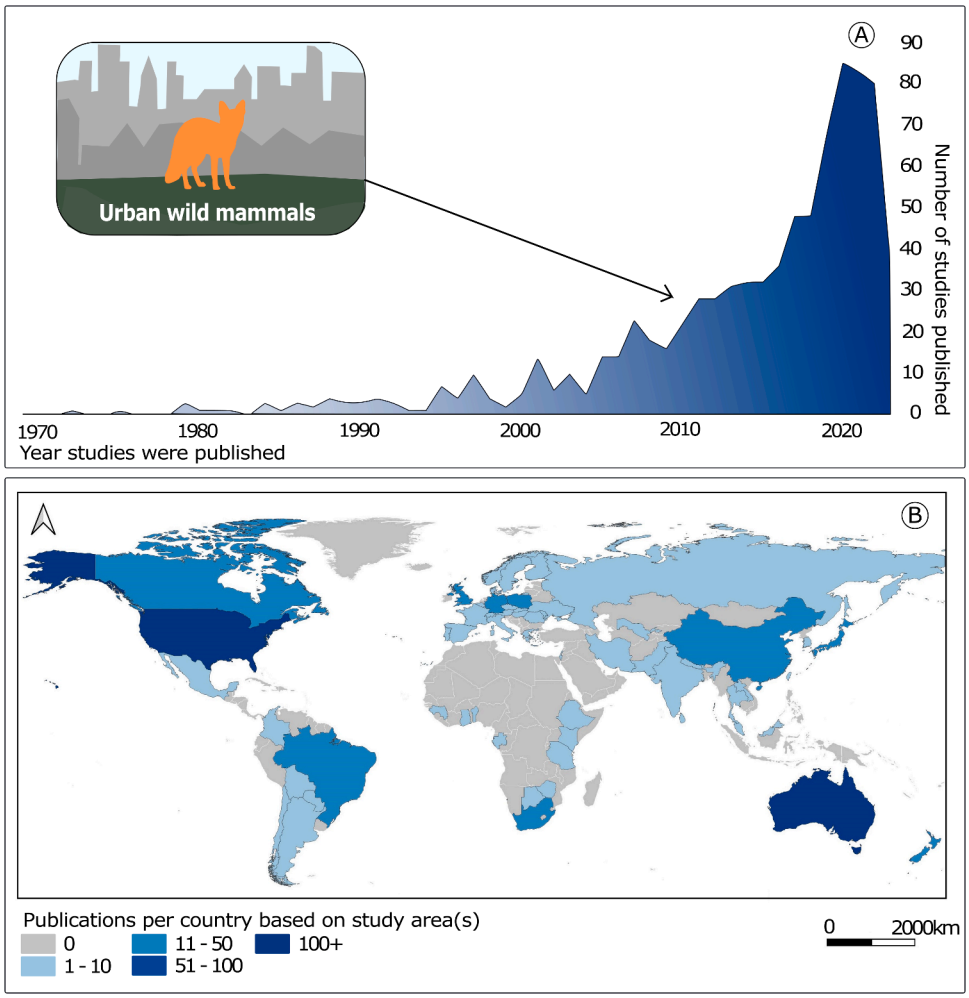

Fig. 2. Temporal and geographical distribution of reviewed articles on urban wild mammals (n = 848). (A) Reviewed Articles published per year in the period 1970–2023. (B) Distribution of published articles by country based on study area(s).

conducted in the USA (n = 253; North America overall n = 303), followed by Australia (n = 114; Oceania overall n = 126), Brazil (n = 48; South America overall n = 62), and South Africa (n = 22, Africa overall n = 44) (Fig. 2). Only 13 studies were conducted in more than one country.

Focus of papers

Of the 848 articles we collected, we categorised 480 articles into WEB, 269 into HDW and 99 as interdisciplinary as those combined both topics (Fig. 3). Until 2010, there were similar numbers of WEB and HDW articles published, after which, the number of WEB studies grew considerably faster than HDW articles (Fig. 3A). The majority of reviewed papers focused on habitat-related issues (n = 284), followed by health (n = 155) and human-wildlife conflict (n = 154). While the categories for HDW are evenly divided with a range between 110 and 154, articles in the WEB-category tended to focus on habitat (n = 284), while the other sub-categories range from 51 articles (population) to 155 articles (health).

Nearly two thirds of articles were only categorized into one sub-category (n = 523). For example, a study on the boldness of foxes (Padovani et al., 2021) was categorized solely as "behavior" and a study on public knowledge about sloths (*Bradypus variegatus*; Pereira et al., 2018) was categorized solely into the "perception" sub-category. Of the remaining articles, a majority focused on two sub-categories (n = 272) and only a minority (n = 53) on three sub-categories.

Identified sub-category combinations over all ranged from none (e.g., "diet" and "perception") to 51 ("conflict" and "perception") (Fig. 4). Within the WEB main category, the number of sub-category combinations varied, ranging from none (for "population" and "health") to 27 (for "habitat" and "behavior"). Similarly, within the HDW main category, such combinations exhibited a range from 19 for "conflict" and "coexistence" to a maximum of 51 combinations observed for "conflict" and "perception". Combinations between HDW and WEB sub-categories exhibited a range, from zero for "diet" and "perception" to a maximum of 22 combinations for "habitat" and "conflict". Comparing these numbers, it is evident that sub-category combinations tended to remain within the main categories of WEB or HDW. Most combinations for a WEB sub-category were observed for "habitat" (n = 75) as it tended to be associated with the other WEB sub-categories "behavior", "inter-species relations", "population", "health", and "diet". For instance, Doncaster and Macdonald (1997) solely combined WEB sub-categories in their study on the activity patterns of red foxes, examining "habitat" and "behavior". Similarly, the majority of combinations for a HDW sub-category were observed for "perception" (n = 115), as it tended to be intertwined with the other HDW sub-categories "conflict," "management," and "coexistence". An example of a study connecting exclusively HDW sub-categories is Ramp et al. (2016), which examined the attitudes towards wildlife fatalities of vehicle collisions, examining "perception" and "conflict".

Interdisciplinary studies are understood as combinations of WEB with HDW. The WEB sub-categories "habitat" was most often combined

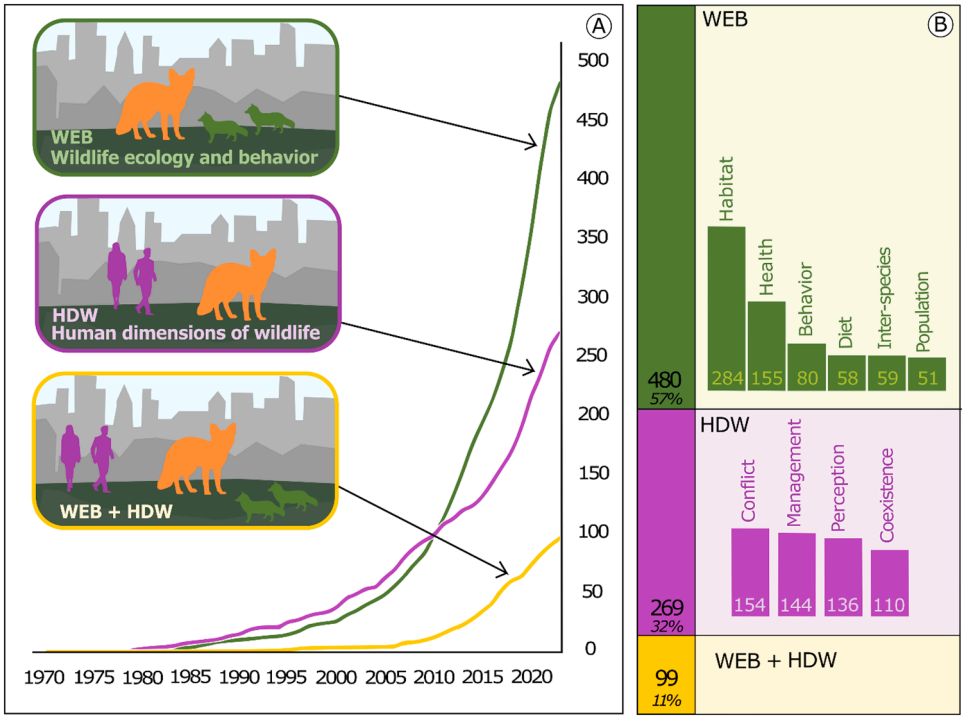

Fig. 3. Share of studies categorized in WEB (Wildlife ecology and behavior), HDW (Human dimensions of wildlife) and HDW+WEB. (A) Cumulative number of studies per year in the period of 1970 to 2023 (June) WEB in green, HDW in purple, HDW+WEB in yellow. (B) Included 848 studies categorized into WEB, HDW and HDW + WEB in percentage and total numbers, with a list of sub-categories for WEB and HDW studies (numbers higher due to multiple categories per article).

with HDW sub-categories "perception", "conflict", "management," and "coexistence" (n = 59). For HDW, "conflict" emerged as the most interdisciplinary connected sub-category, being linked with the WEB sub-categories "habitat", "behavior", "inter-species relation", "population", "health", and "diet" (n = 45). Notably, the interdisciplinary combination of "habitat" and "conflict" was the most frequently observed sub-category combination of HDW and WEB sub-categories (n = 22). Here, an example categorized under "habitat" and "conflict" is Raymond and St. Clair (2023) who explored the connection between human-wildlife conflicts and den site selection of coyotes. There was a noticeable gap of interdisciplinary HDW and WEB subcategory combinations, especially as there were no studies on the combination of "perception" & "diet", "perception" & "population", "coexistence" & "diet", or "coexistence" & "inter-species relations".

Taxonomic families

More than half of the studies included in our review investigated a single mammal family (n = 455), followed by approximatively one third of publications (n = 253) which regarded wildlife as a "general" community of species, and the remaining studies (n = 140) focussed on two or more taxonomic families (see Appendix A: Fig.1). There were 60 different taxonomic families studied, 20 of which were the focus of more than ten articles each, and the remaining 40 of which were represented in fewer than ten studies each (Fig. 5; see Appendix A: Fig. 2). Canidae were most studied (i.e., coyotes, n = 146), followed by Muridae (i.e., rats, n = 102) and Cervidae (i.e., deer, n = 64) (Fig. 5). The taxonomic families least frequently occurring in the reviewed literature include Castoridae (i.e., beavers, n = 3), Elephantidae (i.e., elephants, n = 2) and Bradypodidae (i.e., sloths, n = 1) (see Appendix A: Fig. 2).

WEB studies tended to be focused on Canidae and Muridae. Studies on canids tended to explore population distributions (e.g., Dodge & Kashian, 2013) or genetic structures (e.g., Adducci et al., 2020), and studies on Murids tended to explore wildlife health (e.g., Desvars-Larrive et al., 2019). All taxonomic families with the exception of Cervidae, Ursidae (i.e., bears) and Macropodidae (i.e., kangaroos) were more studied in WEB studies compared to HDW studies (Fig. 5). HDW studies tended to be focused on wildlife in general (i.e., did not specify a taxonomic family; HDW: n = 144), and HDW studies that were on a specific taxonomic family were either about Canidae (n = 38) or Cervidae (n = 26).

For each individual taxonomic family, there tend to be more WEB studies than HDW or interdisciplinary studies, except for Ursidae and Macropodidae, which both had more HDW studies than WEB or interdisciplinary studies (45% and 44% respectively, see Appendix A: Fig. 3). HDW studies were rarest for Soricidae (i.e., shrews, n = 1/16), Cricetidae (i.e., voles, n = 1/38), Muridae (n = 6/102), Felidae (i.e. lynx, n = 2/33), Procyonidae (i.e., raccoons, n = 3/47), and Sciuridae (i.e., squirrels, n = 5/61).

Interdisciplinary studies were either about general wildlife (n = 22), Canidae (n = 19), or Cervidae (n = 12). Interdisciplinary studies on Canidae were about "habitat & conflicts" (for example Murray & St. Clair, 2017) or "habitat & management" (for example Chupp et al., 2013). Interdisciplinary studies on Cervidae were about "behavior & conflict" (for example Tajchman et al., 2017) or "habitat & coexistence" (for example Parker et al., 2011).

Discussion

Past directions of urban mammal research: Identifying research gaps

In this literature review of research on wild mammals in urban landscapes, we aimed to: (Aim I) explore the course of urban ecology, drawing insights from WEB, HDW, and interdisciplinary studies; and (Aim II) examine the taxonomic focus within urban wild mammal research.

Aim I: Trends in WEB, HDW, and interdisciplinary studies

We found that most of the current literature on wildlife in urban

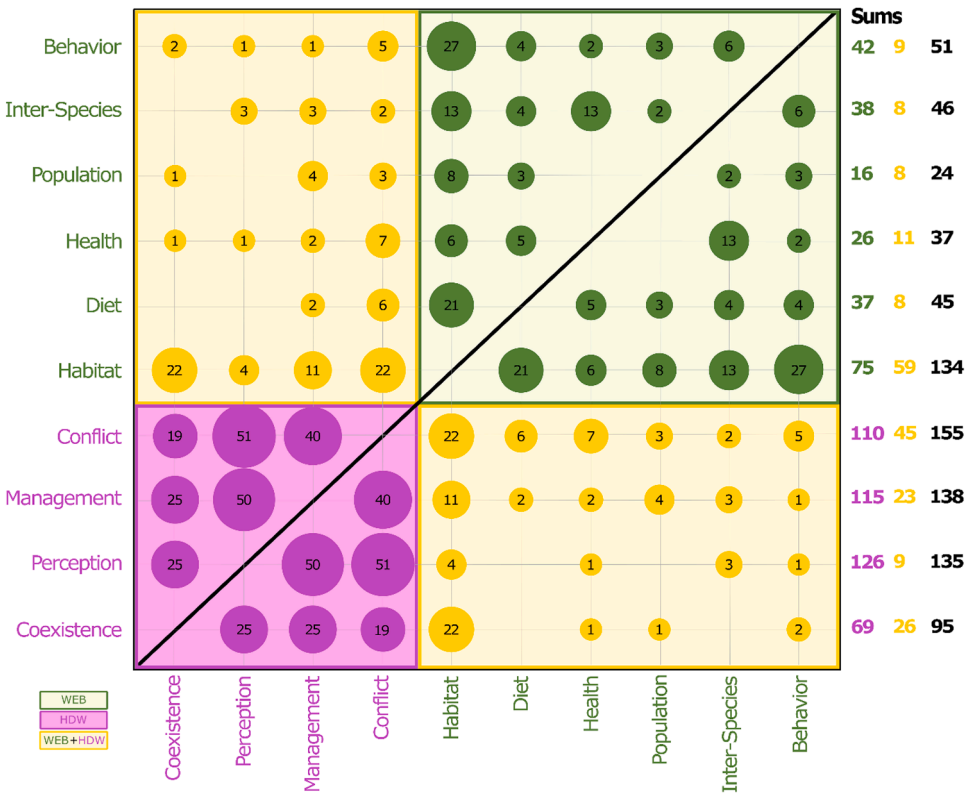

Fig. 4. Visual display of **a** correlation matrix that shows the number of reviewed studies that combine sub-categories. Sub-categories behavior, inter-species relations, population, health, diet, and habitat are part of Wildlife Ecology and Behavior (WEB) highlighted in green font color. Sub-categories conflict, management, perception, and coexistence are part of Human Dimensions of Wildlife (HDW) highlighted in purple font color. Circle size corresponds to the number of studies, as indicated by the number. Empty positions indicate combinations that were not found in our literature review. Circle color refers to the main category of the study: Purple circles show studies solely being part of the HDW category combining sub-categories only within HDW. Green circles show studies solely being part of the WEB category combining sub-categories only within WEB. Yellow circles show studies combining sub-categories from both Human dimensions of wildlife and Wildlife ecology and behavior (WEB+HDW). Numbers on the right display totals of sub-category combinations within main categories (WEB in green, HDW in purple), sub-category combinations of both main categories (WEB+HDW in yellow), followed by the total connections of a selected sub-category with other sub-categories (in black).

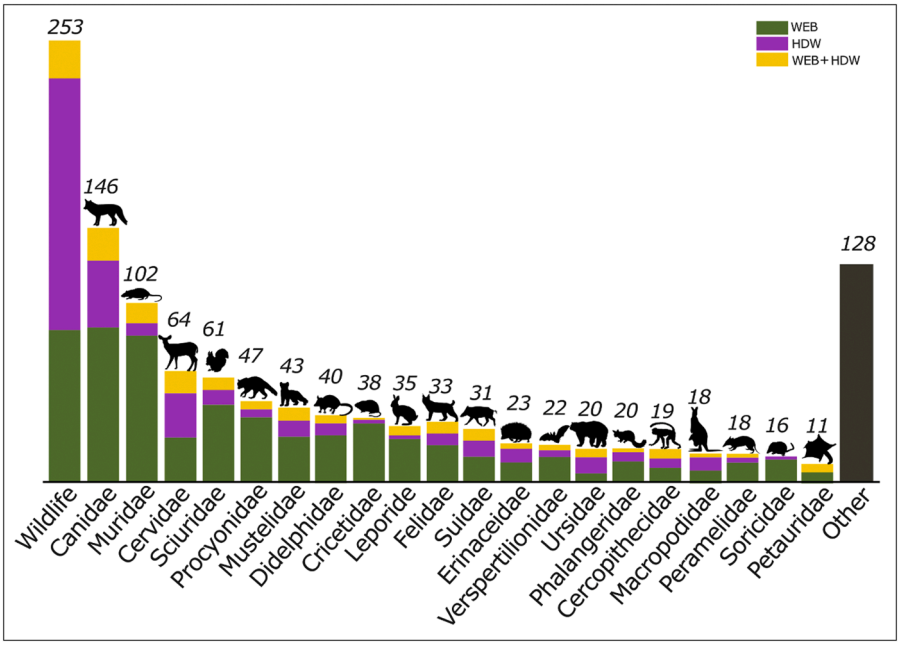

Fig. 5. Taxonomic families studied in more than 10 publications from a review of 848 scientific articles. Numbers indicate the total number of studies focusing on each taxonomic family. Each bar is divided into studies focusing solely on WEB topics (green), HDW topics (purple), or a combination of WEB + HDW topics (yellow). Species found in less than ten studies are included in the "Other" bar (black). Silhouettes of each taxonomic family are from Phylo Pic.

areas tends to be about their ecology or behavior (i.e., WEB papers; Fig. 3). Furthermore, WEB studies tend to be about the habitat that urban wildlife uses (Fig. 3, 4). Studies transitioned from documenting urban wildlife (re)claiming habitat in residential areas in the 1970s (e.g., Timmermans & Snep, 1970), to probing the underlying mechanisms facilitating this reclamation (e.g., Dickman & Doncaster, 1987), then to scrutinizing their adaptation to urban environments (e.g., Quinn, 1997) and to human disturbance (e.g., Markovchick-Nicholls et. al., 2008), and finally to evaluate the functionality of designed spaces for wildlife such as urban green corridors (e.g., Adams et al., 2017). Consequently, ecological themes such as diet, behavior and population dynamics, within WEB might be overlooked, despite their equal relevance to understanding wildlife ecology as habitat movement studies.

Studies about HDW did not show such a clear progression in sub-category focus, and sub-categories within HDW research were highly interconnected (Fig. 4). This is especially true of research on conflict and coexistence, which were commonly studied in tandem. While there is a paradigm shift within the literature as the narrative moves away from human-wildlife conflict towards coexistence (e.g., Bergstrom, 2017; Treves & Santiago-Ávila, 2020), coexistence was the rarest studied HDW-theme and conflict garnered the most attention. Studies centered on conflicts appear to dominate the rest of the literature, calling for a more balanced approach that considers both human and wildlife perspectives.

Interdisciplinary research connecting WEB and HDW studies is the most recent and rarest trend in our review (Fig. 3). Of the 99 interdisciplinary papers we reviewed, a majority explored the relationship between habitat use by wildlife (WEB) and conflict/coexistence with humans (HDW). HDW sub-categories exploring coexistence, management, and perception were seldom intertwined with WEB-related themes, but were connected with other HDW sub-categories (Fig. 4). Reasons for the lack of combinations could be the historical separation of disciplines and academic specialization (Goring et al., 2014; Llerena & Meyer-Krahmer, 2003) as well as communication barriers (O'Reilly et al., 2017). The scarcity of interdisciplinary research combining human dimensions and wildlife ecology limits comprehension of the complex interactions between human needs and the ecology of wildlife and could hinder the development of effective wildlife-inclusive designs.

Aim II: Taxonomic focus within urban wild mammal research

A third of all studies on urban wild mammals focus on a "wildlife in general" narrative without targeting specific mammalian taxa (see Appendix A: Fig.1). This could stem from the tendency to generalise urban wildlife as a uniform entity (Davidar, 2018; Egerer & Buchholz, 2021). For the studies that did focus on specific taxonomic families, we identified a bias toward conflict-centric research: The taxonomic families that are most frequently studied were canids, and murids (Fig. 5), which are perceived to be dangerous (Wilson & Rose, 2021) to human safety (Lute & Carter, 2020; Roskaft et al., 2007) or health (Desvars-Larrive et al., 2019). While conservation research is often biased towards charismatic species (Hoffmann & Montgomery, 2022; Tensen, 2018), for urban studies, charismatic taxa such as Erinaceidae (i.e., European hedgehogs, *Erinaceus europaeus*) are predominantly overlooked (Fig. 5). This oversight poses significant challenges, including the potential misallocation of resources towards conflict resolution strategies at the expense of investigating the complex human-wildlife interactions for more sustainable wildlife-inclusive designs.

Taken together, these trends suggest that one of the challenges to successfully incorporating urban wildlife research into biophilic urban planning, is the focus on wildlife as a problem, encroaching or using habitat that is designated to be for humans only. This may lead to a misallocation of resources towards conflict resolution strategies at the expense of investigating the complex human-wildlife interactions for more sustainable wildlife-inclusive designs. Thus, we have identified five primary knowledge gaps concerning urban wild mammals:

- **Research gap 1:** A scarcity of literature combining human dimensions with wildlife ecology,
- **Research gap 2:** A lack of ecological studies other than habitat, especially diet, behavior, and population dynamics,
- **Research gap 3:** A lack of research dedicated to perception, management and coexistence studies, especially within interdisciplinary connections,
- **Research gap 4:** A simplified emphasis on "wildlife in general", distracting from direct engagement with individual taxonomic families,
- **Research gap 5:** A noticeable scarcity of research addressing taxonomic families beyond those typically associated with conflict.

Future directions of urban wild mammal research: A research agenda

Drawing from the five highlighted research gaps, we propose five research topics for a research agenda on future studies on urban wild mammals, aimed at advancing and supporting prior research, mitigating biases, and filling existing gaps.

Research topic 1: Interdisciplinary research on urban wild mammals incorporating new methods

Interdisciplinary studies connecting HDW and WEB are key to enhancing urban areas for humans and-wildlife. Balancing human perceptions and needs with ecological requirements of biodiversity poses a significant challenge in the design and management of urban greenspaces (Aronson et al., 2017). What is missing is the integration of a social-ecological approach (e.g.,Weaver et al., 2023), encompassing both ecosystem properties and human social dynamics in interactions with nature (Andersson et al., 2014;Sonti, 2020). Given that humans are part of the urban habitat, and that the success of wildlife-inclusive future cities depends on human attitudes towards wildlife (Magle et al., 2012; Soulsbury & White, 2015), an interdisciplinary approach on urban wildlife research is compulsory (Dickman, 2010; Shwartz et al., 2014). Enhanced linkage between research on the human dimension and ecological aspects of wildlife could be illustrated by future interdisciplinary studies. Such studies could view Wilkinson et al.'s (2023) work as a valuable example, who utilized data from animal care and control to categorize conflicts and identify habitat factors in human-wildlife interactions. The present era offers unprecedented opportunities for data gathering from environmental DNA used for population genetics and foraging behavior (Bohmann et al., 2014) to camera trap data for movement ecology (Nichols et al., 2011), and the use of social media to understand humans' perceptions (Monkman et al., 2018). Synthesizing these methods can enable the analysis of human-wildlife interactions within urban environments, addressing the current lack of interdisciplinary studies that contribute to understanding the complex relationship between humans and wildlife in cities.

Research topic 2: Exploring ecological dynamics beyond habitat selection of urban wildlife

Since the inception of urban wildlife as a research focus in the 1970s (Adams, 2005) much ecological research on urban wildlife has centered on understanding their habitat selection within urban areas (e.g., Timmermans & Snep, 1970), which continues to be a primary research focus today (e.g., Maclagan et al., 2020). While investigations into other ecological factors of wildlife, such as behavior, are emerging (e.g., Ritzel & Gallo, 2020), they have received and might continue to receive less attention compared to habitat-related studies if the current narrative persists. Future studies should not only draw inspiration from innovative designs, such as those used to investigate the boldness of urban wildlife behavior (e.g., Padovani et al., 2021) or their genetic distinctiveness (e.g., Adducci et al., 2020), but they should also be motivated to develop their own creative methodologies to explore ecological facets of wildlife in urban areas beyond habitat considerations. We emphasize the

continued need for studies on wildlife habitat as urban areas undergo constant change (e.g., Wellmann et al., 2020) and new wildlife occupies urban habitats (e.g., Bailey et al., 2019). However, since shaping cohabitation with wildlife in urban areas requires a comprehensive understanding beyond just their habitat, we advocate for equal attention to insights into the behavior, diet, and reproduction of urban wildlife. Understanding these aspects is essential for comprehending how urban wildlife navigate and interact with humans and human-built infrastructures.

Research topic 3: Conducting research for the coexistence of humans and non-human animals

While research has progressed beyond viewing wildlife in urban areas as a novelty (e.g., O'Connor, 1981), it has not fully shifted away from characterizing wildlife in urban areas as a conflict (e.g., Hoffmann & O'Riain, 2012). As previously discussed, biophilic future cities are dependent on integration of the needs of wildlife and humans together, thus the narrative needs to shift from conflict to coexistence (Bergstrom, 2017; Treves & Santiago-Ávila, 2020). Examples could include better linking coexistence, perception and management with ecological aspects of wildlife. Such studies could emulate the approach of Morse et al. (2012), who integrated perception surveys with habitat models to investigate black-tailed prairie dogs (*Cynomys ludovicianus*), or follow the example of Walter et al. (2018) in which socio demographics were linked with urban fox occurrences. Consequently, leveraging these advancements can lead to interdisciplinary studies on coexisting with urban wild mammals, thus also addressing research topic 1, enabling a comprehensive understanding of human as well as wildlife perspectives and informing the design of future cities to accommodate the needs of both human and non-human species (Shwartz et al., 2014).

Research topic 4: Disentangling "urban wildlife"

"Urban wildlife" tends to refer to a nebulous, non-specific, city-dwelling species (Eger & Buchholz, 2021). By viewing wildlife as a community, rather than as individual species, research loses the nuances that each species brings to the relationship. The connection of ecological categories with perception studies for targeted species rather than undefined urban wildlife can offer detailed strategies for wildlife integration into planning processes and ensure public engagement and support. Perception studies focusing on a single species (e.g., Patterson et al., 2017) or a set of different animals (e.g., Liordos et al., 2020) were rare within our review compared to those focusing on wildlife in general (e.g., Bruckmann et al., 2021). Species-specific perception studies could avoid comparisons of "good" and "bad" species as for instance in Perry et al. (2020) or Rupprecht (2017). Consequently, conducting studies targeting specific urban wildlife species and especially single taxonomic families might help to understand human attitudes towards a single urban wild species and enable direct management plans as seen in a study on vervet monkeys (*Cercopithecus aethiops pygerythrus*) by Patterson et al. (2017).

Research topic 5: Studying a wider variety of urban mammals with a different set of research motivations and topics

In light of recent insights advocating a departure from perceiving certain animals as inherently disruptive or "out of place" in urban settings (Hubbard & Brooks, 2021), an additional emphasis is to investigate a broader spectrum of species beyond those typically associated with conflict. While the push for diversification beyond mammalian and avian species has been noted (Knapp et al., 2021; Eger & Buchholz, 2021), we underscore the necessity of also enhancing diversity within the mammalian class. Based on our discoveries, we underscore three pivotal aspects essential for guiding future research on studying urban wild mammals.

Firstly, in the context of traditionally conflict-related species (e.g., coyotes), research efforts should pivot away from exclusively resolving or preventing conflict and instead prioritize fostering coexistence. Despite the adaptation of many wild mammal species to urban environments (Schell et al., 2021; Santini et al., 2019), and the potential benefits they bring to humans such as reconnecting with nature (e.g., Richardson, 2023), the prevailing narrative surrounding urban mammals tends to prioritize conflict scenarios, especially with canids and murids. When mammals perceived as conflict animals overshadow the narrative for human-wildlife coexistence, coexistence will be consistently associated with conflicts (Hill, 2021) and therefore hinder proactive pursuit of coexistence as an initial goal.

Secondly, we highlight the importance to research underrepresented urban wild mammals perceived as less-conflicted and charismatic by humans (e.g., hedgehogs, beavers) to promote coexistence. While certain fauna coined as "charismatic" are frequently employed to promote conservation efforts (Ducarme et al., 2013; Krause & Robinson, 2017), this strategy largely centers on uncolonized areas, for instance the European bison (*Bison bonasus*) for Białowieża, Poland (Mysterud et al., 2007), and is not extensively applied in urban areas. While it is debatable how successful strategies using flagship or umbrella species are (Caro, 2010; Entwistle, 2000; Entwistle & Dunstone, 2000), we see the usage of charismatic "urban ambassador species" aligned with these but different: Instead of advocating for entire conservation strategies based solely on these species, our focus should be on leveraging their potential to enhance research on human-wildlife coexistence. This could involve researching the utilization of urban ambassador species to design wildlife-inclusive buildings, to create biodiverse gardens, and to foster the connectivity of urban green spaces. For example, by studying and managing for hedgehogs (*Erinaceus europaeus*), which generally are an accepted species (Basak et al., 2022), one may also be able to promote greenspace connectivity (Gazzard, 2021) benefitting wildlife communities in general (Kirk et al., 2023).

Thirdly, while the taxonomic scope may be influenced by biases in the geographical coverage (Trimble & van Aarde, 2012) or considerations of appeal that facilitate funding and publication (Brooke et al., 2014; Collins et al., 2021), we advocate for increasing motivation to study conflicted species avoiding a conflict narrative and charismatic species for coexistence by considering their importance for funding and inclusion in articles.

Considerations for application in urban planning: Building future cities for humans and wildlife

Urban sprawl brings humans closer to wildlife and creates new conflicts as wildlife habitat is being transformed for humans (Festus et al., 2020). While urban planners often disregard wildlife, research on urban mammals can inform future city designs to facilitate coexistence (Gallo & Fidino, 2018; Nilon et al., 2017). While cohabitation concepts, e.g., Weisser and Hauck (2017), are gaining prominence, evidence-based recommendations are lacking (Berke & Godschalk, 2009; Nilon et al., 2017). Future investigations could follow the advice by Apfelbeck et al. (2020) and investigate post occupancies of altered habitats for wildlife and report findings to planners. Studies found within our review, such as the use of nest-boxes by small arboreal mammals (Durant et al., 2009) or road overpass use by Teixeira et al. (2013), could be used as a blueprint for future studies on the function of urban spaces planned for wildlife.

One major consideration in urban planning is the social and environmental inequalities that exist in urban areas, and which significantly impact wildlife communities (Ellis-Soto et al., 2023; Magle et al., 2021). Frequently, initiatives aimed at expanding green spaces prioritize neighborhoods undergoing gentrification, rather than disadvantaged areas facing ongoing disinvestment (Reibel et al., 2021; Sharifi et al., 2021). This results in greening efforts being utilized for urban upgrading, exacerbating social segregation (Haase et al., 2017). This phenomenon underscores the emergence of a relationship between societal status and biodiversity (Kuras et al., 2020; Wood et al., 2024) affecting wildlife communities (Estien et al., 2023; Schmidt & Garroway, 2022).

While wildlife is not targeted by these practices, they are affected by them (Hubbard & Brooks, 2021; Wilson, 2023), highlighting the importance of considering wildlife in this context (March & Bunce, 2023). Instances of this dynamic can be observed across the globe, in North America (Nelson-Olivieri et al., 2024), South America (Torres et, al.,2021), Africa (Shackleton & Gwedla, 2021), Europe (Strohbach et al., 2009), Asia (Sultana et al., 2022) and Australia (Sharifi et al., 2021). To address this challenge, it is essential to integrate societal factors alongside perceptions and ecological considerations in the realm of urban planning and management. For example, it is important to investigate how historical marginalization may affect the implementation of coexistence strategies, while simultaneously advocating against profit-driven urban greening. Moving forward, it is imperative for future cites to integrate biodiversity into planning outcomes, while avoiding a *green gentrification cycle*, i.e., the process by which green initiatives are used to raising property values, displacing lower-income individuals and perpetuating socio-economic inequality (Rigolon & Collins, 2023).

Limitations

Our review, and thereby the conclusions we draw, is limited by the results from our database searches. Namely, papers about specific species, with no mention of "wildlife", "mammal", wild animal" in the title or abstract, were likely missing from our dataset. For example, a study by Bailey et al. (2019) on beavers in urban landscapes was not within the Scopus results as "wildlife" or "mammal" was not included in the papers' title, abstract or keywords as the authors only chose to include the species name "beaver". This is not an isolated issue confined to this review; rather, it consistently emerges when focusing on a comprehensive examination of urban wildlife (e.g., Ritzel & Gallo, 2020). Reviews focusing solely on species-level within urban areas could support our reviewed literature, but such reviews are rare. For example, a literature review by Fingland et al. (2022) on the red squirrel in urban areas resulted in 25 included articles, while we found 61 on the taxonomic family of Sciuridae. Further, a review on urban carnivores by Streicher et al. (2023) mirrors our findings with Canidae being the most studied carnivore and Felidae playing a minor role. Moreover, the underrepresentation of certain species, can be attributed to a bias, which tends to favor more charismatic species or those attracting more funding (Clark & May, 2002; dos Santos et al., 2020). Despite the absence of certain papers, the validity of the conclusions or recommendations persists, given the ongoing ineffectiveness observed in practical implementation of coexistence measures or more wildlife-inclusive design in urban areas.

Conclusion

While studies on urban wild mammals are increasing, their focus remains aligned with past patterns in urban mammal research: Studies on coexistence are overshadowed by those on conflicts (see also Bhatia et al., 2020; Soulsbury & White, 2015), mammal species perceived as health or safety threat (Canids, murids) surpass other species; and perception as well as coexistence studies look mainly at wildlife in general instead of single species. With a focus on urban mammal studies combining ecology and human dimensions, the information gathered can be used to build future biodiverse cities envisioned by Beatley (2011) incorporating human and wild mammal needs simultaneously. As human settlement will expand in the future and natural lands will decrease, it is important to design and create urban spaces for wild mammals that benefit humans and wildlife simultaneously.

CRediT authorship contribution statement

Simon S. Moesch: Conceptualization, Methodology, Data curation, Investigation, Formal analysis, Visualization, Writing – original draft, Writing – review & editing. **Thilo Wellmann:** Validation, Writing – original draft, Writing – review & editing. **Dagmar Haase:** Writing – original draft, Writing – review & editing. **Manisha Bhardwaj:** Supervision, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The list of papers collected from the Scopus review, as well as the list of included papers classified by us, are available for download as supplementary material accompanying this literature review.

Acknowledgement

We thank Jonathan M. Jeschke for his initial guidance on the literature review. We thank Monica Egerer for curating this Special Issue and inviting our contribution.

This work was supported by the Deutsche Bundesstiftung Umwelt (DBU) [20020/652–33/0] and the German Science Foundation (DFG), Research Training Group ConFoBi [GRK 2123].

Supplementary materials

Supplementary material associated with this article can be found in the online version, at doi:10.1016/j.baae.2024.05.004.

References

Adams, C. E. (2009). *Urban wildlife management*. Boca Raton, Florida, United States: CRC press.

Adams, L. W. (2005). Urban wildlife ecology and conservation: A brief history of the discipline. *Urban ecosystems, 8*, 139–156. https://doi.org/10.1007/s11252-005-4377-7

Adams, T. S., Chase, M. J., Rogers, T. L., & Leggett, K. E. (2017). Taking the elephant out of the room and into the corridor: Can urban corridors work? *Oryx: the journal of the Fauna Preservation Society, 51*(2), 347–353. https://doi.org/10.1017/S0030605315001246

Adducci, A., Jasperse, J., Riley, S., Brown, J., Honeycutt, R., & Monzón, J. (2020). Urban coyotes are genetically distinct from coyotes in natural habitats. *Journal of Urban Ecology, 6*(1), juaa010. https://doi.org/10.1093/jue/juaa010

Andersson, E., Barthel, S., Borgström, S., Colding, J., Elmqvist, T., Folke, C., & Gren, Å. (2014). Reconnecting cities to the biosphere: Stewardship of green infrastructure and urban ecosystem services. *Ambio, 43*, 445–453. https://doi.org/10.1007/s13280-014-0506-y

Apfelbeck, B., Snep, R. P., Hauck, T. E., Ferguson, J., Holy, M., Jakoby, C., et al. (2020). Designing wildlife-inclusive cities that support human-animal co-existence. *Landscape and Urban Planning, 200*, Article 103817. https://doi.org/10.1016/j.landurbplan.2020.103817

Aronson, M. F., Lepczyk, C. A., Evans, K. L., Goddard, M. A., Lerman, S. B., MacIvor, J. S., et al. (2017). Biodiversity in the city: Key challenges for urban green space management. *Frontiers in Ecology and the Environment, 15*(4), 189–196. https://doi.org/10.1002/fee.1480

Bailey, D. R., Dittbrenner, B. J., & Yocom, K. P. (2019). Reintegrating the North American beaver (Castor canadensis) in the urban landscape. *Wiley Interdisciplinary Reviews: Water, 6*(1), e1323. https://doi.org/10.1002/wat2.1323

Basak, S. M., Hossain, M. S., O'Mahony, D. T., Okarma, H., Widera, E., & Wierzbowska, I. A. (2022). Public perceptions and attitudes toward urban wildlife encounters–A decade of change. *Science of the total environment, 834*, Article 155603. https://doi.org/10.1016/j.scitotenv.2022.155603

Basak, S. M., Rostovskaya, E., Birks, J., & Wierzbowska, I. A. (2023). Perceptions and attitudes to understand human-wildlife conflict in an urban landscape–A systematic review. *Ecological Indicators, 151*, Article 110319. https://doi.org/10.1016/j.ecolind.2023.110319

Bath, A. J. (1998). The role of human dimensions in wildlife resource research in wildlife management. *Ursus (International Association for Bear Research and Management), 10*, 349–355.

Beatley, T. (2011). *Biophilic cities: Integrating nature into urban design and planning*. Washington D.C., USA: Island Press.

Bekessy, S. A., White, M., Gordon, A., Moilanen, A., Mccarthy, M. A., & Wintle, B. A. (2012). Transparent planning for biodiversity and development in the urban fringe.

Landscape and Urban Planning, 108(2–4), 140–149. https://doi.org/10.1016/j.landurbplan.2012.09.001

Beliniak, A., Gryz, J., Klich, D., Jasińska, K., & Krauze-Gryz, D. (2022). Body Condition and Breeding of Urban Red Squirrels: Comparison of Two Populations Affected by Different Levels of Urbanization. *Animals, 12*(23), 3246. https://doi.org/10.3390/ani12233246

Bergstrom, B. J. (2017). Carnivore conservation: Shifting the paradigm from control to coexistence. *Journal of Mammalogy, 98*(1), 1–6. https://doi.org/10.1093/jmammal/gyw185

Berke, P., & Godschalk, D. (2009). Searching for the good plan: A meta-analysis of plan quality studies. *Journal of Planning Literature, 23*(3), 227–240. https://doi.org/10.1177/0885412208327014

Bhatia, S., Redpath, S. M., Suryawanshi, K., & Mishra, C. (2020). Beyond conflict: Exploring the spectrum of human–wildlife interactions and their underlying mechanisms. *Oryx: the journal of the Fauna Preservation Society, 54*(5), 621–628. https://doi.org/10.1017/S003060531800159X

Bohmann, K., Evans, A., Gilbert, M. T. P., Carvalho, G. R., Creer, S., Knapp, M., et al. (2014). Environmental DNA for wildlife biology and biodiversity monitoring. *Trends in Ecology & Evolution, 29*(6), 358–367. https://doi.org/10.1016/j.tree.2014.04.003

Bowler, D. E., Buyung-Ali, L., Knight, T. M., & Pullin, A. S. (2010). Urban greening to cool towns and cities: A systematic review of the empirical evidence. *Landscape and Urban Planning, 97*(3), 147–155. https://doi.org/10.1016/j.landurbplan.2010.05.006

Breuste, J. (2022). What Constitutes Urban Nature in the Green City Concept? In J. Breuste (Ed.), *The green city: Urban nature as an ideal, provider of services and conceptual urban design approach* (pp. 255–314). London: Springer.

Bridge, B., & Harris, S. (2020). Do urban red foxes attack people? An exploratory study and review of incidents in Britain. *Human–Wildlife Interactions, 14*(2), 151–165. https://doi.org/10.26077/d6f5-f6f3

Brooke, Z. M., Bielby, J., Nambiar, K., & Carbone, C. (2014). Correlates of research effort in carnivores: Body size, range size and diet matter. *PloS one, 9*(4), e93195. https://doi.org/10.1371/journal.pone.0093195

Bruckermann, T., Greving, H., Schumann, A., Stillfried, M., Börner, K., Kimmig, S. E., et al. (2021). To know about science is to love it? Unraveling cause–effect relationships between knowledge and attitudes toward science in citizen science on urban wildlife ecology. *Journal of Research in Science Teaching, 58*(8), 1179–1202. https://doi.org/10.1002/tea.21697

Caro, T. (2010). *Conservation by proxy: Indicator, umbrella, keystone, flagship, and other surrogate species*. Washington, DC, USA: Island Press.

Carrus, G., Scopelliti, M., Lafortezza, R., Colangelo, G., Ferrini, F., Salbitano, F., et al. (2015). Go greener, feel better? The positive effects of biodiversity on the well-being of individuals visiting urban and peri-urban green areas. *Landscape and Urban Planning, 134*, 221–228. https://doi.org/10.1016/j.landurbplan.2014.10.022

Carter, N. H., & Linnell, J. D. (2016). Co-adaptation is key to coexisting with large carnivores. *Trends in Ecology & Evolution, 31*(8), 575–578. https://doi.org/10.1016/j.tree.2016.05.006

Chupp, A. D., Roder, A. M., Battaglia, L. L., & Pagels, J. F. (2013). A case study of urban and peri-urban mammal communities: Implications for the management of National Park Service areas. *Northeastern Naturalist, 20*(4), 631–654. https://doi.org/10.1656/045.020.0415

Clark, J. A., & May, R. M. (2002). Taxonomic bias in conservation research. *Science (New York, N.Y.), 297*(5579), 191–192. https://doi.org/10.1126/science.297.5579.191b

Collins, M. K., Magle, S. B., & Gallo, T. (2021). Global trends in urban wildlife ecology and conservation. *Biological Conservation, 261*, Article 109236. https://doi.org/10.1016/j.biocon.2021.109236

Davidar, P. (2018). The term human-wildlife conflict creates more problems than it resolves: Better labels should be considered. *Journal of Threatened Taxa, 10*(8), 12082–12085. https://doi.org/10.11609/jott.4319.10.8.12082-12085

Desvars-Larrive, A., Ruppitsch, W., Lepuschitz, S., Szostak, M. P., Spergser, J., Feßler, A. T., et al. (2019). Urban brown rats (Rattus norvegicus) as possible source of multidrug-resistant Enterobacteriaceae and meticillin-resistant Staphylococcus spp., Vienna, Austria, 2016 and 2017. *Eurosurveillance, 24*(32), Article 1900149. https://doi.org/10.34657/49

Dickman, A. J. (2010). Complexities of conflict: The importance of considering social factors for effectively resolving human–wildlife conflict. *Animal conservation, 13*(5), 458–466. https://doi.org/10.1111/j.1469-1795.2010.00368.x

Dickman, C. R., & Doncaster, C. P. (1987). The ecology of small mammals in urban habitats. I. Populations in a patchy environment. *The Journal of Animal Ecology*, 629–640. https://doi.org/10.2307/5073

Dodge, W. B., & Kashian, D. M. (2013). Recent distribution of coyotes across an urban landscape in southeastern Michigan. *Journal of Fish and Wildlife Management, 4*(2), 377–385. https://doi.org/10.3996/062013-JFWM-040

Doncaster, C. P., & Macdonald, D. W. (1997). Activity patterns and interactions of red foxes (Vulpes vulpes) in Oxford city. *Journal of Zoology, 241*(1), 73–87. https://doi.org/10.1111/j.1469-7998.1997.tb05500.x

dos Santos, Correia, R. A., Malhado, A. C., Campos-Silva, J. V., Teles, D., … Ladle, R. J. (2020). Drivers of taxonomic bias in conservation research: a global analysis of terrestrial mammals. *Animal Conservation, 23*(6), 679–688. https://doi.org/10.1111/acv.12586

Drake, M. D., Nils Peterson, M., Griffith, E. H., Olfenbuttel, C., DePerno, C. S., & Moorman, C. E. (2020). How urban identity, affect, and knowledge predict perceptions about coyotes and their management. *Anthrozoös, 33*(1), 5–19. https://doi.org/10.1080/08927936.2020.1694302

Ducarme, F., Luque, G., & Courchamp, F. (2013). What are "charismatic species" for conservation biologists. *BioSciences Master Reviews, 10*(1), 1–8.

Durant, R., Luck, G. W., & Matthews, A. (2009). Nest-box use by arboreal mammals in a peri-urban landscape. *Wildlife Research, 36*(7), 565–573. https://doi.org/10.1071/WR09058

Egerer, M., & Buchholz, S. (2021). Reframing urban "wildlife" to promote inclusive conservation science and practice. *Biodiversity and Conservation, 30*, 2255–2266. https://doi.org/10.1007/s10531-021-02182-y

Ellis-Soto, D., Chapman, M., & Locke, D. H. (2023). Historical redlining is associated with increasing geographical disparities in bird biodiversity sampling in the United States. *Nature Human Behaviour, 7*(11), 1869–1877. https://doi.org/10.1038/s41562-023-01688-5

Entwistle, A. (2000). Flagships for the future? *Oryx: the journal of the Fauna Preservation Society, 34*(04), 239–240. https://doi.org/10.1017/S003060530003129X

Entwistle, A., & Dunstone, N. (2000). *Priorities for the conservation of mammalian diversity: Has the panda had its day?* (Vol. 3). Cambridge: Cambridge University Press.

Estien, C.O., Fidino, M., Wilkinson, C.E., Morello-Frosch, R., & Schell, C.J. (2023). Historical redlining impacts wildlife biodiversity across California. EcoEvoRxiv. https://doi.org/10.32942/X24K60.

Festus, I. A., Omoboye, I. F., & Andrew, O. B. (2020). Urban sprawl: Environmental consequence of rapid urban expansion. *Malaysian Journal of Social Sciences and Humanities, 5*(6), 110–118. https://doi.org/10.47405/mjssh.v5i6.411

Fingland, K., Ward, S. J., Bates, A. J., & Bremner-Harrison, S. (2022). A systematic review into the suitability of urban refugia for the Eurasian red squirrel Sciurus vulgaris. *Mammal Review, 52*(1), 26–38. https://doi.org/10.1111/mam.12264

Gallo, T., & Fidino, M. (2018). Making wildlife welcome in urban areas. *eLife, 7*, e41348. https://doi.org/10.7554/eLife.41348

Gallo, T., Fidino, M., Lehrer, E. W., & Magle, S. B. (2017). Mammal diversity and metacommunity dynamics in urban green spaces: Implications for urban wildlife conservation. *Ecological Applications, 27*(8), 2330–2341. https://doi.org/10.1002/eap.1611

Garrard, G. E., Williams, N. S., Mata, L., Thomas, J., & Bekessy, S. A. (2018). Biodiversity sensitive urban design. *Conservation Letters, 11*(2), e12411. https://doi.org/10.1111/conl.12411

Gazzard, A., Boushall, A., Brand, E., & Baker, P. J. (2021). An assessment of a conservation strategy to increase garden connectivity for hedgehogs that requires cooperation between immediate neighbours: A barrier too far? *PloS one, 16*(11), Article e0259537. https://doi.org/10.1371/journal.pone.0259537

Gillis, K., & Gatersleben, B. (2015). A review of psychological literature on the health and wellbeing benefits of biophilic design. *Buildings, 5*(3), 948–963. https://doi.org/10.3390/buildings5030948

Goring, S. J., Weathers, K. C., Dodds, W. K., Soranno, P. A., Sweet, L. C., Cheruvelil, K. S., et al. (2014). Improving the culture of interdisciplinary collaboration in ecology by expanding measures of success. *Frontiers in Ecology and the Environment, 12*(1), 39–47. https://doi.org/10.1890/120370

Grade, A. M., Warren, P. S., & Lerman, S. B. (2022). Managing yards for mammals: Mammal species richness peaks in the suburbs. *Landscape and Urban Planning, 220*, Article 104337. https://doi.org/10.1016/j.landurbplan.2021.104337

Haase, D., Kabisch, S., Haase, A., Andersson, E., Banzhaf, E., Baró, F., et al. (2017). Greening cities–To be socially inclusive? About the alleged paradox of society and ecology in cities. *Habitat international, 64*, 41–48. https://doi.org/10.1016/j.habitatint.2017.04.005

Hadidian, J. (2015). Wildlife in US cities: Managing unwanted animals. *Animals, 5*(4), 1092–1113. https://doi.org/10.3390/ani5040401

Harris, N. C., Wilkinson, C. E., Fleury, G., & Nhleko, Z. N. (2023). Responsibility, equity, justice, and inclusion in dynamic human–wildlife interactions. *Frontiers in Ecology and the Environment, 21*(8), 380–387. https://doi.org/10.1002/fee.2603

Herr, J., Schley, L., & Roper, T. J. (2009). Stone martens (Martes foina) and cars: Investigation of a common human–wildlife conflict. *European Journal of Wildlife Research, 55*, 471–477. https://doi.org/10.1007/s10344-009-0263-6

Higgins, J. P. T., & Green, S. (2008). *Cochrane handbook for systematic reviews of interventions*. Chichester, UK: John Wiley & Sons.

Hill, C. M. (2021). Conflict is integral to human-wildlife coexistence. *Frontiers in Conservation Science, 2*, 69. https://doi.org/10.3389/fcosc.2021.734314

Hoffman, T. S., & O'Riain, M. J. (2012). Monkey management: Using spatial ecology to understand the extent and severity of human–baboon conflict in the Cape Peninsula, South Africa. *Ecology and Society, 17*(3). https://doi.org/10.5751/ES-04882-170313

Hoffmann, C. F., & Montgomery, R. A. (2022). Implications of taxonomic bias for human–carnivore conflict mitigation. *Oryx: the journal of the Fauna Preservation Society, 56*(6), 917–926. https://doi.org/10.1017/S0030605321000582

Houston, D., Hillier, J., MacCallum, D., Steele, W., & Byrne, J. (2018). Make kin, not cities! Multispecies entanglements and "becoming-world" in planning theory. *Planning theory, 17*(2), 190–212. https://doi.org/10.1177/1473095216668804

Hubbard, P., & Brooks, A. (2021). Animals and urban gentrification: Displacement and injustice in the trans-species city. *Progress in Human Geography, 45*(6), 1490–1511. https://doi.org/10.1177/0309132520986221

Hunold, C. (2020). Urban greening and human-wildlife relations in Philadelphia: From animal control to multispecies coexistence? *Environmental Values, 29*(1), 67–87. https://doi.org/10.3197/096327119×15678473650901

Kay, C. A., Rohnke, A. T., Sander, H. A., Stankowich, T., Fidino, M., Murray, M., et al. (2021). Barriers to building wildlife-inclusive cities: Insights from the deliberations of urban ecologists, urban planners and landscape designers. *People and Nature, 1*(1), 1–9. https://doi.org/10.1002/pan3.10283

Kirk, H., Soanes, K., Amati, M., Bekessy, S., Harrison, L., Parris, K., et al. (2023). Ecological connectivity as a planning tool for the conservation of wildlife in cities. *MethodsX, 10*, Article 101989. https://doi.org/10.1016/j.mex.2022.101989

Knapp, S., Aronson, M. F., Carpenter, E., Herrera-Montes, A., Jung, K., Kotze, D. J., et al. (2021). A research agenda for urban biodiversity in the global extinction crisis. *Bioscience, 71*(3), 268–279. https://doi.org/10.1093/biosci/biaa141

König, H. J., Kiffner, C., Kramer-Schadt, S., Fürst, C., Keuling, O., & Ford, A. T. (2020). Human–wildlife coexistence in a changing world. *Conservation Biology, 34*(4), 786–794. https://doi.org/10.1111/cobi.13513

Kowarik, I. (2018). Urban wilderness: Supply, demand, and access. *Urban Forestry & Urban Greening, 29*, 336–347. https://doi.org/10.1016/j.ufug.2017.05.017

Krause, M., & Robinson, K. (2017). Charismatic species and beyond: How cultural schemas and organisational routines shape conservation. *Conservation and Society, 15*(3), 313–321. https://doi.org/10.4103/cs.cs_16_63

Kuras, E. R., Warren, P. S., Zinda, J. A., Aronson, M. F., Cilliers, S., Goddard, M. A., et al. (2020). Urban socioeconomic inequality and biodiversity often converge, but not always: A global meta-analysis. *Landscape and Urban Planning, 198*, Article 103799. https://doi.org/10.1016/j.landurbplan.2020.103799

Liordos, V., Foutsa, E., & Kontsiotis, V. J. (2020). Differences in encounters, likeability and desirability of wildlife species among residents of a Greek city. *Science of The Total Environment, 739*, Article 139892. https://doi.org/10.1016/j.scitotenv.2020.139892

Llerena, P., & Meyer-Krahmer, F. (2003). Interdisciplinary research and the organization of the university: General challenges and a case study. In A. Geuna, A. J. Salter, & W. Edward Steinmüller (Eds.), *Science and innovation* (p. 2831). Cheltenham, UK: Edward Elgar Publishing.

Lowry, H., Lill, A., & Wong, B. B. (2013). Behavioural responses of wildlife to urban environments. *Biological Reviews, 88*(3), 537–549. https://doi.org/10.1111/brv.12012

Lunney, D., & Burgin, S. (2004). Urban wildlife management: An emerging discipline. In D. Lunney, & S. Burgin (Eds.), *Urban wildlife: More than meets the eye*. Mosman, Australia: Royal Zoological Society of New South Wales. https://doi.org/10.7882/FS.2004.075.

Lute, M. L., & Carter, N. H. (2020). Are we coexisting with carnivores in the American West? *Frontiers in Ecology and Evolution, 8*, 48. https://doi.org/10.3389/fevo.2020.00048

Maclagan, S. J., Coates, T., Hradsky, B. A., Butryn, R., & Ritchie, E. G. (2020). Life in linear habitats: The movement ecology of an endangered mammal in a peri-urban landscape. *Animal conservation, 23*(3), 260–272. https://doi.org/10.1111/acv.12533

Magle, S. B., Fidino, M., Sander, H. A., Rohnke, A. T., Larson, K. L., Gallo, T., et al. (2021). Wealth and urbanization shape medium and large terrestrial mammal communities. *Global Change Biology, 27*(21), 5446–5459. https://doi.org/10.1111/gcb.15800

Magle, S. B., Hunt, V. M., Vernon, M., & Crooks, K. R. (2012). Urban wildlife research: Past, present, future. *Biological Conservation, 155*, 23–32. https://doi.org/10.1016/j.biocon.2012.06.018

Manfredo, M., & Vaske, J. (1996). Introduction. *Human Dimensions of Wildlife, 1*(1), 5–6. https://doi.org/10.1002/9781119241072.ch9

March, L., & Bunce, S. (2023). Placing the more-than-human in environmental gentrification. *Transactions of the Institute of British Geographers, 48*(1), 180–194. https://doi.org/10.1111/tran.12563

Markovchick-Nicholls, L., Regan, H. M., Deutschman, D. H., Widyanata, A., Martin, B., Noreke, L., et al. (2008). Relationships between human disturbance and wildlife land use in urban habitat fragments. *Conservation Biology, 22*(1), 99–109. https://doi.org/10.1111/j.1523-1739.2007.00846.x

McDonald, R. I., Aronson, M. F., Beatley, T., Beller, E., Bazo, M., Grossinger, R., et al. (2023). Denser and greener cities: Green interventions to achieve both urban density and nature. *People and Nature, 5*(1), 84–102. https://doi.org/10.1002/pan3.10423

Moher, D., Shamseer, L., Ghersi, D., Liberati, A., Petticrew, M., & Shekelle, P. (2015). PRISMA for systematic review protocols (PRISMA-P). *Systematic Reviews, 1*(1). https://doi.org/10.1186/2046-4053-4-1

Monkman, G. G., Kaiser, M. J., & Hyder, K. (2018). Text and data mining of social media to map wildlife recreation activity. *Biological Conservation, 228*, 89–99. https://doi.org/10.1016/j.biocon.2018.10.010

Morse, L. K., Powell, R. L., & Sutton, P. C. (2012). Scampering in the city: Examining attitudes toward black-tailed prairie dogs in Denver, Colorado. *Applied Geography, 35*(1–2), 414–421. https://doi.org/10.1016/j.apgeog.2012.09.005

Murray, M. H., & St Clair, C. C. (2017). Predictable features attract urban coyotes to residential yards. *The Journal of Wildlife Management, 81*(4), 593–600. https://doi.org/10.1002/jwmg.21223

Mysterud, A., Bartoń, K. A., Jędrzejewska, B., Krasiński, Z. A., Niedziałkowska, M., Kamler, J. F., et al. (2007). Population ecology and conservation of endangered megafauna: The case of European bison in Białowieża Primeval Forest. *Poland. Animal Conservation., 10*(1), 77–87. https://doi.org/10.1111/j.1469-1795.2006.00075.x

Nelson-Olivieri, J. R., Layden, T. J., Antunez, E., Khalighifar, A., Lasky, M., Laverty, T. M., et al. (2024). Inequalities in noise will affect urban wildlife. *Nature Ecology & Evolution, 8*(1), 163–174. https://doi.org/10.1038/s41559-023-02257-9

Nichols, J. D., O'Connell, A. F., & Karanth, K. U. (2011). Camera traps in animal ecology and conservation: What's next? In J. D. Nichols, A. F. O'Connell, & K. U. Karanth (Eds.), *Camera traps in animal ecology: Methods and analyses* (pp. 253–263). New York., USA: Springer.

Nilon, C. H., Aronson, M. F. J., Cilliers, S. S., Dobbs, C., Frazee, L. J., Goddard, M. A., et al. (2017). Planning for the future of urban biodiversity: A global review of city-scale initiatives. *Bioscience, 67*(4), 332–342. https://doi.org/10.1093/biosci/bix012

O'Reilly, P., Lee, S. H., O'Sullivan, M., Cullen, W., Kennedy, C., & MacFarlane, A (2017). Assessing the facilitators and barriers of interdisciplinary team working in primary care using normalisation process theory: An integrative review. *PloS one, 12*(5), Article e0177026. https://doi.org/10.1371/journal.pone.0177026

O'Connor, F. B. (1981). Wildlife in the city. *Landscape Research, 6*(3), 2–4. https://doi.org/10.1080/01426398108705988

Padovani, R., Shi, Z., & Harris, S. (2021). Are British urban foxes (Vulpes vulpes) "bold"? The importance of understanding human–wildlife interactions in urban areas. *Ecology and Evolution, 11*(2), 835–851. https://doi.org/10.1002/ece3.7087

Parker, I. D., Lopez, R. R., Silvy, N. J., Davis, D. S., & Owen, C. B. (2011). Long-term effectiveness of US 1 crossing project in reducing Florida Key deer mortality. *Wildlife Society Bulletin, 35*(3), 296–302. https://doi.org/10.1002/wsb.45

Patterson, L., Kalle, R., & Downs, C. (2017). A citizen science survey: Perceptions and attitudes of urban residents towards vervet monkeys. *Urban Ecosystems, 20*, 617–628. https://doi.org/10.1007/s11252-016-0619-0

Pereira, K. F., Young, R. J., Boere, V., & Silva, I. D. O. E. (2018). Urban sloths: Public knowledge, opinions, and interactions. *Animals, 8*(6), 90. https://doi.org/10.3390/ani8060090

Perry, G., Boal, C., Verble, R., & Wallace, M. (2020). Good" and "bad" urban wildlife. In F. M. Angelici, & & L. Rossi (Eds.), *Problematic wildlife II: New conservation and management challenges in the human-wildlife interactions* (pp. 141–170). London: Springer.

Quinn, T. (1997). Coyote (Canis latrans) food habits in three urban habitat types of western Washington. *Northwest Science, 71*(1), 1–5. https://hdl.handle.net/2376/1256.

Ramp, D., Wilson, V. K., & Croft, D. B. (2016). Contradiction and complacency shape attitudes towards the toll of roads on wildlife. *Animals, 6*(6), 40. https://doi.org/10.3390/ani6060040

Raymond, S., & St Clair, C. C. (2023). Urban coyotes select cryptic den sites near human development where conflict rates increase. *The Journal of Wildlife Management, 87*(1), e22323. https://doi.org/10.1002/jwmg.22323

Rega-Brodsky, C. C., Aronson, M. F., Piana, M. R., Carpenter, E. S., Hahs, A. K., Herrera-Montes, A., et al. (2022). Urban biodiversity: State of the science and future directions. *Urban Ecosystems, 25*(4), 1083–1096. https://doi.org/10.1007/s11252-022-01207-w

Reibel, M., Rigolon, A., & Rocha, A. (2021). Follow the money: Do gentrifying and at-risk neighborhoods attract more park spending? *Journal of Urban Affairs, 45*(5), 923–941. https://doi.org/10.1080/07352166.2021.1886857

Richardson, M. (2023). *Reconnection: Fixing our broken relationship with nature*. London, UK: Pelagic Publishing Ltd.

Rigolon, A., & Collins, T. (2023). The green gentrification cycle. *Urban Studies, 60*(4), 770–785. https://doi.org/10.1177/00420980221114952

Ritzel, K., & Gallo, T. (2020). Behavior change in urban mammals: A systematic review. *Frontiers in Ecology and Evolution, 8*, Article 576665. https://doi.org/10.3389/fevo.2020.576665

Roskaft, E., Händel, B., Bjerke, T., & Kaltenborn, B. R. P. (2007). Human attitudes towards large carnivores in Norway. *Wildlife biology, 13*(2), 172–185. https://doi.org/10.2981/0909-6396

Rupprecht, C. D. (2017). Ready for more-than-human? Measuring urban residents' willingness to coexist with animals. *Fennia-International Journal of Geography, 195*(2), 142–160. https://doi.org/10.11143/fennia.64182

Santini, L., González-Suárez, M., Russo, D., Gonzalez-Voyer, A., von Hardenberg, A., & Ancillotto, L. (2019). One strategy does not fit all: Determinants of urban adaptation in mammals. *Ecology Letters, 22*(2), 365–376. https://doi.org/10.1111/ele.13199

Scarbrough, A. G., Waldbauer, G. P., & Sternburg, J. G. (1972). Response to cecropia cocoons of Mus musculus and two species of Peromyscus. *Oecologia, 10*, 137–144. https://doi.org/10.1007/BF00347985

Schell, C. J., Stanton, L. A., Young, J. K., Angeloni, L. M., Lambert, J. E., Breck, S. W., et al. (2021). The evolutionary consequences of human–wildlife conflict in cities. *Evolutionary Applications, 14*(1), 178–197. https://doi.org/10.1111/eva.13131

Schmidt, C., & Garroway, C. J. (2022). Systemic racism alters wildlife genetic diversity. *Proceedings of the National Academy of Sciences, 119*(43), Article e2102860119. https://doi.org/10.1073/pnas.2102860119

Shackleton, C. M., & Gwedla, N. (2021). The legacy effects of colonial and apartheid imprints on urban greening in South Africa: Spaces, species, and suitability. *Frontiers in Ecology and Evolution, 8*, Article 579813. https://doi.org/10.3389/fevo.2020.579813

Sharifi, F., Nygaard, A., Stone, W. M., & Levin, I. (2021). Green gentrification or gentrified greening: Metropolitan Melbourne. *Land use policy, 108*, Article 105577. https://doi.org/10.1016/j.landusepol.2021.105577

Shaw, W. W., McCaffrey, R., & Steidl, R. J. (2009). Integrating Wildlife Conservation into Land-Use Plans for Rapidly Growing Cities. In A. X. Esparza, & G. McPherson (Eds.), *The planner's guide to natural resource conservation: The science of land development beyond the metropolitan fringe* (pp. 117–131). New York: Springer.

Shwartz, A., Turbé, A., Julliard, R., Simon, L., & Prévot, A. C. (2014). Outstanding challenges for urban conservation research and action. *Global environmental change, 28*, 39–49. https://doi.org/10.1016/j.gloenvcha.2014.06.002

Sonti, N. F. (2020). Ambivalence in the Woods: Baltimore resident perceptions of local forest patches. *Society & Natural Resources, 33*(7), 823–841. https://doi.org/10.1080/08941920.2019.1701162

Soulsbury, C. D., & White, P. C. (2015). Human–wildlife interactions in urban areas: A review of conflicts, benefits and opportunities. *Wildlife research, 42*(7), 541–553. https://doi.org/10.1071/WR14229

Steiner, F., Simmons, M., Gallagher, M., Ranganathan, J., & Robertson, C. (2013). The ecological imperative for environmental design and planning. *Frontiers in Ecology and the Environment, 11*(7), 355–361. https://doi.org/10.1890/130052

Streicher, J. P., Ramesh, T., & Downs, C. T. (2023). Not all mammalian small carnivores are equal: A global review of the research effort in urban areas. *African Journal of Wildlife Research, 53*(1), 72–86.

Strohbach, M. W., Haase, D., & Kabisch, N. (2009). Birds and the city: Urban biodiversity, land use, and socioeconomics. *Ecology and Society, 14*(2). https://doi.org/10.5751/ES-03141-140231

Sultana, M., Storch, I., Naser, M. N., & Uddin, M. (2022). Land cover and socioeconomic factors explain avian diversity in a tropical megacity. *Ecology and Society, 27*(1), 19. https://doi.org/10.5751/ES-12905-270119

Sweet, F. S., Noack, P., Hauck, T. E., & Weisser, W. W. (2023). The relationship between knowing and liking for 91 urban animal species among students. *Animals, 13*(3), 488. https://doi.org/10.3390/ani13030488

Tajchman, K., Drozd, L., Karpiński, M., Czyżowski, P., Goleman, M., & Chmielewski, S. (2017). Wildlife-vehicle collisions in urban area in relation to the behaviour and density of mammals. *Polish Journal of Natural Sciences, 32*(1), 49–59.

Teixeira, F. Z., Printes, R. C., Fagundes, J. C. G., Alonso, A. C., & Kindel, A. (2013). Canopy bridges as road overpasses for wildlife in urban fragmented landscapes. *Biota Neotropica, 13*, 117–123. https://doi.org/10.1590/S1676-06032013000100013

Templier, M., & Paré, G. (2015). A framework for guiding and evaluating literature reviews. *Communications of the Association for Information Systems, 37*(1), 6–10. https://doi.org/10.17705/1CAIS.03706

Tensen, L. (2018). Biases in wildlife and conservation research, using felids and canids as a case study. *Global Ecology and Conservation, 15*, E00423. https://doi.org/10.1016/j.gecco.2018.e00423

Timmermans, W., & Snep, R. (1970). Ecological models and urban wildlife. *WIT Transactions on Ecology and the Environment, 46*, 1–12. https://doi.org/10.2495/ECO010211

Torres, P. H. C., Souza, D. T. P., Empinotti, V. L., & Jacobi, P. R (2021). Green gentrification and contemporary capitalist production of space: Notes from Brazil. *Cahiers des Amériques latines* (pp. 185–210). https://doi.org/10.4000/cal.13550

Treves, A., & Santiago-Ávila, F. J. (2020). Myths and assumptions about human-wildlife conflict and coexistence. *Conservation Biology, 34*(4), 811–818. https://doi.org/10.1111/cobi.13472

Trimble, M. J., & van Aarde, R. J. (2012). Geographical and taxonomic biases in research on biodiversity in human-modified landscapes. *Ecosphere (Washington, D.C), 3*(12), 1–16. https://doi.org/10.1890/ES12-00299.1

van Patter, L. E. (2021). Comment: Encountering Urban Animals: Towards the Zoöpolis. In B. Bovenkerk, & J. Keulartz (Eds.), *Animals in our midst: The challenges of co-existing with animals in the anthropocene* (pp. 361–373). Cham: Springer International Publishing.

Walter, T., Zink, R., Laaha, G., Zaller, J. G., & Heigl, F. (2018). Fox sightings in a city are related to certain land use classes and sociodemographics: Results from a citizen science project. *BMC Ecology, 18*, 1–11. https://doi.org/10.1186/s12898-018-0207-7

Weaver, M. J., Monterastelli, A., Strauss, E. G., & Romolini, M. (2023). A Collaborative Social-Ecological Research Approach to Inform & Address Urban Coyote Management Challenges. *Cities and the Environment, 16*(1), 9. https://doi.org/10.15365/cate.2023.160109

Weisser, W. W., & Hauck, T. E. (2017). Animal Aided Design–Using a species' life-cycle to improve open space planning and conservation in cities and elsewhere. *BioRxiv.* , Article 150359. https://doi.org/10.1101/150359

Wellmann, T., Schug, F., Haase, D., Pflugmacher, D., & van der Linden, S. (2020). Green growth? On the relation between population density, land use and vegetation cover fractions in a city using a 30-years Landsat time series. *Landscape and Urban Planning, 202*, Article 103857. https://doi.org/10.1016/j.landurbplan.2020.103857

Wilkinson, C. E., Caspi, T., Stanton, L. A., Campbell, D., & Schell, C. J. (2023). Coexistence across space and time: Social-ecological patterns within a decade of human-coyote interactions in San Francisco. *People and Nature, 5*(6), 2158–2177. https://doi.org/10.1002/pan3.10549

Wilson, J., & Rose, J. (2021). A predator in the park: Mixed methods analysis of user preference for coyotes in urban parks. In P. Danby, K. Daspher, & R. Finkel (Eds.), *Multispecies leisure: Human-animal interactions in leisure landscapes* (pp. 145–161). London, UK: Routledge.

Wilson, N. (2023). How the legacy of racial segregation affects urban biodiversity. *Bioscience, 73*(4), 245–249. https://doi.org/10.1093/biosci/biad014

Wood, E. M., Esaian, S., Benitez, C., Ethington, P. J., Longcore, T., & Pomara, L. Y. (2024). Historical racial redlining and contemporary patterns of income inequality negatively affect birds, their habitat, and people in Los Angeles, California. *Ornithological Applications, 126*(1), duad044. https://doi.org/10.1093/ornithapp/duad044