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PERSPECTIVE

# Barriers to building wildlife-inclusive cities: Insights from the deliberations of urban ecologists, urban planners and landscape designers

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## Abstract

1. Cities are seen as quintessentially human; however, because they can offer viable habitat to many plants, animals and other forms of life, cities are also dynamic ecosystems.
2. As urban areas expand to house more of the global human population and reduce natural habitat for wildlife, the need for wildlife-inclusive urban planning and design becomes increasingly pressing.
3. The 2019 Urban Wildlife Information Network Summit responded to this need by connecting a group of 80 scientists, urban planners and designers to examine the role of cities in combating the global biodiversity crisis.
4. The Summit focused on identifying and addressing barriers to transdisciplinary work between these communities, such as disciplinary silos, varying incentive structures, funding, differences in spatio-temporal scale, existing infrastructure and values and bias.
5. We explore the challenges to network building for wildlife-inclusive design and planning revealed by the Summit and offer potential solutions for overcoming these obstacles for more effective collaboration around wildlife-inclusive cities.

KEYWORDS

transdisciplinarity, urban design, urban planning, urban wildlife, wildlife-inclusivity

## 1 | INTRODUCTION

More than half of the world's human population now lives in cities (United Nations, 2018). Urban areas are growing rapidly worldwide (Grimm et al., 2008) such that, by 2050, nearly 70 percent of humanity will live in cities (United Nations, 2018). While urban areas are hubs for culture, jobs, policy and development, they are also home to surprisingly diverse wildlife communities (Faeth et al., 2011; Tucker et al., 2020). These wildlife can be beneficial to human residents' physical, mental and emotional well-being (Cox et al., 2018; Sandifer et al., 2015). However, as human population and building densities increase, the ability of many wildlife species to use urban areas dwindles, causing one of the biggest threats to global biodiversity today. As such, when creating and managing urban landscapes, it is increasingly important to consider not just the needs and well-being of humans, but also those of wildlife to facilitate sustainable human–wildlife coexistence.

Though some facets of urban planning and design, particularly landscape architecture, incorporate ecological theory in practice, the vast majority of these cases centre on vegetation, with little focus on urban wildlife as a distinct concern (with the notable exception of bird-friendly design; (Calkins, 2005; Grose, 2014; Innes & Booher, 2016; Weisser & Hauck, 2017; Wolch & Owens, 2017). Wildlife-inclusive city planning and design, which views wildlife habitat and well-being as part of a healthy urban system, aims to do just this (Apfelbeck et al., 2020). Collaboration across disciplines is vital to the successful implementation of wildlife-inclusive planning and design. Wildlife research on how animals adapt to and live in urban areas can only be translated to changes in urban structure and culture with the input of the practitioners who shape the urban landscape through policy and development. Similarly, urban policy, planning and design can only adequately address wildlife issues by incorporating experts who can advise and provide biologically relevant data. Discourse on wildlife-inclusive urban design and planning is a burgeoning topic of interest (Apfelbeck et al., 2020; Aronson et al., 2017; Garrard et al., 2017; Hess et al., 2014; Nilon et al., 2017; Weisser & Hauck, 2017), but there remains a lack of understanding of how planners, designers, land managers and educators can move from theory to practice and work together to better support biodiversity in cities.

With the recognition that devising wildlife-inclusive cities requires multidisciplinary attention, the main questions become: what are the barriers to cross-disciplinary interaction and how can we overcome them to turn this aspiration into action? The 2019 Urban Wildlife Information Network (UWIN) Summit sought to answer these questions by connecting a group of 80 scientists, urban planners and designers from across North America to examine their current and potential role in combating urban wildlife biodiversity loss by advancing wildlife-inclusive planning and design. UWIN is a collaboration of researchers using shared methods to uncover the processes that shape life in cities for humans and wildlife alike (Magle et al., 2019). To advance this goal, the network hosted a 4-day Summit during which participants discussed urban wildlife, planning, design and equitable distribution of ecosystem services in cities. This cross-disciplinary convening was composed of workshops, discussions and roundtables prepared and led by UWIN ecologists and urban planners and designers from outside the network. Sessions covered ways in which cities could be strategically developed to increase biodiversity while minimizing human–wildlife conflict, and how these strategies should be implemented to ensure equitable distribution between neighbourhoods. Given the need for collaborative policy, design, planning, management and research, and the dearth of tangible guidelines for establishing collaboration, Summit discussions focused on identifying barriers to transdisciplinary collaboration and devising strategies for overcoming them. Summit attendees identified six major challenges to establishing effective partnerships between the research and practitioner communities: disciplinary silos, incentive structures, funding, differences in scale, existing infrastructure and values and bias. We discuss these challenges and offer potential strategies for overcoming them in the following sections. In doing so, we seek to both increase recognition of these challenges and to facilitate the establishment of practitioner–researcher collaborations that will improve our ability to enact wildlife-inclusive urban planning and design.

## 2 | BARRIERS TO CROSS-DISCIPLINARY COLLABORATION

### 2.1 | Disciplinary silos

Urban ecology, planning and design are distinct disciplines with unique histories. This distinctiveness presents an opportunity to meld knowledge and create holistic products (e.g. research papers, neighbourhood plans or building designs) or, conversely, disjointed products that address humans and wildlife separately. At the UWIN Summit, planners, designers and urban ecologists alike expressed hesitation in reaching out to people in other professions for fear of wasting others' time, as many did not know what daily work looks like for people in other disciplines or even to whom they should reach out to for initial contact. However, these initial connections are critical first steps to breaking down disciplinary silos and establishing lasting collaboration. Making such connections will require the existence of venues intentionally dedicated to collaboration across science, design and planning to facilitate meaningful introductions between researchers and practitioners rather than occasional opportunistic meetings. These venues could take the form of broad conferences (like the UWIN Summit) that bring in diverse stakeholders, or regional inter-disciplinary meetings. Transdisciplinary centres focused on sustainable, problem-oriented collaboration, such as University of Minnesota's Center for Urban & Regional Affairs or the South American Institute for Resilience and Sustainability Studies, also offer the opportunity for specialized researchers and practitioners to work together in an intentionally collaborative space (CURA, 2021; SARAS[2], 2021). These centres host resident researchers and practitioners who collaborate on projects across disciplines and bring in external collaborators from the local community, government or other relevant institutions. Additionally, planning firms and municipal departments can add a biologist or ecologist position to their permanent staff to make collaboration a default. These resident scientists must be valued as integral members of the planning and design space, not just a symbolic nod towards transdisciplinary values. Spaces for initial and sustained connections across disciplines can lessen the resource investment required to establish collaborations for creating wildlife-inclusive urban landscapes.

The UWIN Summit also recognized that without cross-disciplinary collaboration, siloed work inevitably has a narrow purview and reach. For example, ecologists often embed a call for applying their research to policy and planning in the conclusions of scientific manuscripts without providing a framework for doing so. Planners and designers may be working in an area that could provide viable wildlife habitat and movement but do not incorporate biologically informed plans because they are unaware of existing research or are not traditionally trained to value them (Calkins, 2005; Nassauer & Opdam, 2008; Nilon et al., 2017; Steiner et al., 2013). To help break down these siloes, transdisciplinary teams should guide the formation of research questions to ensure results will be actionable in wildlife-inclusive planning and development (Fisher et al., 2020; McDonnell & Hahs, 2013; Nassauer & Opdam, 2008; for a case study see Felson, 2013). Collaboration early on in a project development process allows collaborators to better understand the goals, questions and constraints (i.e. time, space, skills, administrative capacity) of each stakeholder so that multi-disciplinary projects benefit all involved parties. As more research teams, firms and government bodies develop these forward-thinking, transdisciplinary teams, professional norms will likely change to support a culture of collaboration.

Differences in disciplinary norms and frameworks are often present in the language, communication styles and terminology used in professional settings (Fischer et al., 2011; Fox et al., 2006; Lund et al., 2006; Salter & Hearn, 1996). Planners and designers may not have taken a science course since secondary school and scientists rarely have a background in planning or design (Steiner et al., 2013). To facilitate collaboration, cross-disciplinary work should start earlier in academic and career paths by providing experiences such as transdisciplinary laboratory environments or degree programmes for undergraduate students. For example, science and ecology coursework could be promoted in initial certification and recertification processes for the American Institute of Certified Planners. Scientists must also work to ensure their findings are in accessible formats that communicate and make tangible what wildlife-inclusive features look like in practice. One such example from the architecture field is Francis DK Ching's *Visual Dictionary of Architecture* (Ching, 1995), which uses graphics to document concepts, materials and methods in architecture to make common design principles widely accessible to architects and designers, as well as those outside of the profession. Planners and designers attending the UWIN Summit reported relying more heavily on visuals and summaries due to time constraints, rather than the peer-reviewed manuscripts and statistical analyses with which scientists commonly work. Scientists might thus outline definitions and concepts and interpret their findings using policy and design recommendations and visuals whenever possible to better reach planners and other practitioners (Weisser & Hauck, 2017). In addition to (or rather than) teaching already specialized professionals how to communicate beyond their discipline, intermediaries that specialize in the exchange of complicated information across disciplinary and professional divides could be brought in to facilitate communication (Cid & Pouyat, 2013; for a case study, see Bednarek et al., 2016). For wildlife science to address planning and design needs and vice versa, explicit and accessible communication is key.

## 2.2 | Incentives

In science, architecture, planning and beyond, incentives provide stimuli that determine individual and organizational behaviour. They might be legal, moral, social, economic or some combination, but no matter how they stimulate behaviour, incentives are powerful motivators that kick-start and shape project goals. At the UWIN Summit, attendees discussed the effects of differing incentives on projects from different disciplines and how they shape project outcomes. For example, attendees identified clear incentives that motivate scientists to focus on theoretical research related to urban wildlife (e.g. grant funding, tenure, trends in ecological research) and the lack of incentives for many scientists, particularly in academia, to engage planning and design communities. Similarly, designers and planners oftentimes lack incentives to consider wildlife in their work and have competing incentives that push them away from such consideration. To better incorporate wildlife-inclusive design into cities, it is vital for professionals in disparate fields to not only understand the incentive structures that shape the behaviour of their potential collaborators, but also to find ways to incentivize collaborations among disconnected groups.

Planners and designers are driven by a multitude of incentives, most of which do not directly involve urban wildlife. Summit attendees reported that common incentives driving planners and designers include utilitarian considerations, trends in urban planning and design, regulatory needs, and the demands and preferences of their clients and constituents (which, increasingly, *may* include broader environmental considerations, but are not typically specific to wildlife). Although there is ample information on the benefits of healthy ecosystem and ecosystem services (i.e. economic, social, public health; Christie et al., 2006; Costanza et al., 1997; Elmqvist et al., 2015), Summit attendees reported a lack of accessible information on the potential benefits of wildlife-inclusive design and planning to the human residents of cities. Additionally, positive nature-based outcomes of wildlife inclusivity for which clients and constituents look, such as mature native plants and biodiverse communities, often take years or longer to come to fruition. If benefits are realized only later down the road, planners and designers may not get the immediate buy-in they need from clients to incorporate these long-term positive changes. As such, it is difficult to incorporate these elements into new projects, as there is little incentive for planners and designers to ask clients to allocate time and money for research implementation (Calkins, 2005).

Assigning economic, social and health benefits to wildlife-inclusive design, and presenting those benefits accessibly might create clear incentives for planners and designers to bring these features to a client, but such benefit assessments typically require further collaborations among siloed scientific disciplines as few scientists have training in both the social and natural sciences. New initiatives, such as certification programmes, are one option for incentivizing planners and designers to offer greater consideration to wildlife. Certification programmes are shown to bolster the reputations of certificate recipients, increase confidence in the product a buyer is getting (e.g. an apartment or house), and give designers and planners something to show for their investment in environmentally friendly design and planning (Matisoff et al., 2014; Raynolds et al., 2007). Programmes that offer certification for wildlife-inclusive yards and communities, such as the National Wildlife Federation's certified wildlife habitat and Tree City USA, are shown to incentivize the use of native flora and fauna in yards and communities (Berland et al., 2016; Widows & Drake, 2014). A wildlife-centric building certification programme could similarly normalize habitat features in modern design (for one example, see Studio Animal-Aided Design out of Berlin, Germany; Studio Animal-Aided Design, 2021). By creating more incentives that are intentionally focused on wildlife-inclusive design, the planning and design fields can change the standards and goals to which new projects adhere.

The scientific community operates under different incentives related to publishing, grant funding and the tenure processes, all of which inhibit collaboration across fields. Researchers in and, to a certain extent, outside of academia must consistently publish new research in high impact peer-reviewed journals to stay relevant, acquire grant funding for three- to five-year projects and advance in their careers (Rawat & Meena, 2014). This structure, the publish-or-perish paradigm, is not conducive to long-term collaborations with professionals from other fields who might not be motivated to publish peer-reviewed manuscripts. For academics working toward tenure and promotion, transdisciplinary projects require time and energy that is diverted from projects that may result in publication and may reduce the likelihood of advancing in their field. This is particularly salient for planning and design applications, as that work is often local and applied and unlikely to be published in high-impact journals (Nassauer & Opdam, 2008; Puskás et al., 2021). Oftentimes, collaborations that occur around a single location are more conducive to a case-study, which is hard to justify investing time and resources in. UWIN Summit participants identified several solutions for encouraging researchers to collaborate with planners and designers. First, grant funding from scientific institutions that are specifically geared toward transdisciplinary collaboration could serve as a clear incentive. One example is the Natural Sciences and Engineering Research Council of Canada Alliance Grants, which encourage collaboration between research institutes, and the public, private and not-for-profit sectors (NSERC, 2021). Other recent funding programmes (e.g. National Science Foundation's Urban Systems and Communities in the 21st Century) that include explicit objectives related to the co-production of knowledge through collaboration create an incentive for researchers to move out of academic silos and into planning arenas (C21C, 2021). Furthermore, publication venues that prioritize applied research would help incentivize conducting such research. Several new journals, such as the British Ecological Society's *People and Nature*, and the Society for Conservation Biology's *Conservation Science and Practice*, already provide publishing opportunities for explicitly transdisciplinary and applied work, but more are needed (British Ecological Society, 2021; Society for Conservation Biology, 2021). Tenure committees and administrators in higher education must also expand the types of achievements that help researchers to secure tenure, promotion and grants. Though the motivations behind research, policy and design may not always align, understanding and creating incentives across fields can help professionals work towards common end goals.

### 2.2.1 | Incentive structures: Funding

One of the underlying drivers (or hindrances) of many collaborations is funding, regardless of the disciplines involved. Funding often magnifies the hesitancy of scientists to get involved in applied research, as it involves redistributing resources to what many consider to be low-impact side projects that may be unfeasible unless funding exists to compensate the researcher for their time. In fact, administrative staff often incentivize projects that generate funding to cover overhead costs and salaries over local applied work to help cover the ongoing costs of running a research centre. Similarly, incorporating species habitat into new development is perceived as expensive among urban planners and architects (Calkins, 2005; Naidoo et al., 2006; Polak et al., 2014). Summit attendees noted that incorporating an additional facet such as wildlife well-being into a project that is already guided by safety standards, functionality, aesthetic appeal, building codes and physical constraints is oftentimes unrealistic for a project budget.

First and foremost, architects, planners and scientists must avoid competing for funding and resources must be available to encourage a transdisciplinary project team model. Some major funding organizations are now turning their attention to collaborative research. For example, the United States National Science Foundation's transformative research agenda prioritizes convergence research—research using the expertise and methods from diverse disciplines—through their Sustainable Urban Systems Program and 10 'Big Ideas' guiding future funding efforts (NSF, 2020). Though this model still prioritizes research over application, it is a good first step toward collaboration across the research, planning and design professions. Additionally, partnering across disciplines may open up previously unavailable pools of funding. For instance, architects and planners can partner with universities and other research institutions to apply for research-based grants, or researchers might partner with a municipal planning agency to propose local tax and bond initiatives. Transdisciplinary professional partnerships, as well as funding organizations prioritizing sharing of pertinent questions, goals and methods across disciplines, will effectively increase the reach and relevance of wildlife-inclusive scholarship, design and policy.

Although a lack of funding often prohibits collaborative projects, sometimes costs can be minimal (Garbuzov & Ratnieks, 2014). When invited to meetings about new development and policy, biologists could offer examples of wildlife features that add value without adding major costs, such as removing invasive plant species, changing the location of vegetation and/or changing lighting direction and wavelength (Ikin et al., 2015). Areas where multi-functionality might be possible should be sought out. For example, if a designer is planning to put a water feature at a site, working with a biologist to create a pond that simultaneously satisfies the clients aesthetic preferences while leaving additional water storage capacity to act as a retention pond can provide ecological benefits while minimizing costs. Additionally, emphasizing cost-saving measures and instances where money spent up front might mean cost savings in the future (e.g. reduced energy bills from green roofs) can help to quantify the benefits of wildlife-inclusive features (though it is important to note that cost savings are not guaranteed). Approaches from the ecosystem services field to assign monetary value to healthy, functioning ecosystems can help to forecast and identify concrete benefits of wildlife-inclusive design measures (Abson & Termansen, 2011). Identifying points of potential cost savings or minimal costs added is crucial to minimizing financial barriers to wildlife-inclusive design and planning.

## 2.3 | Differences in scale

Wildlife select habitat at multiple spatial and temporal scales (Fidino et al., 2020; Forman, 2014; Hostetler & Knowles-Yanez, 2003; Johnson, 2016; Savard et al., 2000). Thus, wildlife-inclusive design can be challenging due to a mismatch of the scales at which urban ecologists, planners, and designers work (Cash et al., 2006; Cumming et al., 2006; Grose, 2014). Because scale plays such a central role in ecosystem dynamics, it is vital to consider a range of spatial and temporal scales when planning and designing urban areas from the site to the regional level. For instance, wildlife move throughout the landscape and, depending on the home range of a given species, that movement might be beyond the individual site-level (e.g. land parcel, neighbourhood, park) (Gilbert-Norton et al., 2010). Site extent matters as well, as each species needed resources require a certain amount of space to thrive, and a habitat patch might be less suitable as an individual site than it is as a site connected to other green spaces (Doerr, 2011; Hodgson et al., 2011). Furthermore, species' habitat needs may change depending on seasonality and life cycle stage. Identifying the scales at which species and urban planning and design operate, as well as mismatches among those scales, will enable collaborations across disciplines for wildlife-inclusive design and planning.

Planners and designers work at a variety of spatial scales ranging from a single building site to a neighbourhood to a full city. Similarly, researchers might work at microscopic scales all the way up to regional studies of wildlife communities and beyond. Wildlife, people and the urban landscape are interconnected. As such, researchers, designers and planners must account for the unintended impacts that their decisions might have at other spatial scales. For example, individual wildlife-inclusive yard design significantly increases native bird diversity at the neighbourhood level in the Greater Chicago region (Belaire et al., 2014). However, accounting for such ripple effects can be difficult if collaborators are operating at different scales. For example, if an architect brings a site design to a landscape ecologist asking for advice on how the design might be made more wildlife-inclusive, they will likely receive advice related to the broader surrounding landscape, as landscape ecology focuses on the interactions between different species and their environment. However, a behavioural ecologist, who focuses on behavioural interactions between individuals, might have finer (or broader) scale recommendations for a site. Before establishing collaborations, it is vital to understand the spatial scale at which potential collaborators work and seek out connections to those who are operating at similar scales. If resources allow, also collaborating with professionals working at different spatial scales allows for better understanding of how a project may impact interconnected systems in the urban landscape.

Scientists, planners and designers also operate at different temporal scales (Cash et al., 2006; Löfvenhaft et al., 2002) which can make collaboration difficult or impractical. Summit attendees noted that planning and design tend to rely on client deadlines while scientists tend to work on semester or quarter, funding or tenure cycles. Planners and designers must weigh practical considerations; while including external collaborators adds critical value to a project, it may also add to the project timeline (Kainer et al., 2009; Löfvenhaft et al., 2004). If a planner approaches a scientist with a question that requires field research and finds that that the scientist first needs to secure institutional review board or institutional animal care and use committee approval and permits, then wait for the active season of the animal of interest and conduct fieldwork, with results not expected for several years, collaborations may end before research even begins. In cases where collaboration is possible, data collected before, during and after construction or land-use change (in tandem with a control site when practical) is the most effective way to gauge a project's impact on the urban ecosystem. To reduce the start-up time associated with new projects, long-term monitoring of urban wildlife populations is vital so that at the very least, broad trends in community composition are known, even if a specific project site was not previously monitored (Magle et al., 2019). Additionally, researchers' need to publish for career advancement can make them proprietary over data before analysis and publication, encouraging the practice of sharing data and recommendations only after publication, which can take years. Researchers should provide data, whether that be making datasets open access or available upon request, to minimize the temporal mismatch between planning and design project deadlines and the publication timeline.

## 2.4 | Existing infrastructure

A city's urban structure will inevitably influence the types of wildlife that make use of the urban landscape (Fidino et al., 2020). Ideally, wildlife habitat would be incorporated from the beginning of a neighbourhood's development, as retrofitting a landscape to be wildlife-inclusive is much more difficult (Cascone et al., 2018; Miller & Buys, 2008; Parris et al., 2018). UWIN summit attendees addressed the barriers to collaboration around wildlife-inclusive design that arise from infrastructure in densely developed areas, limiting the physical space where wildlife-inclusive design can take place. The physical structures already present in the urban landscape make high-impact collaborative projects difficult to manifest, as they limit the possibilities of where wildlife habitat and connective greenspace can be placed.

Some city neighbourhoods are already heavily developed, with little open space remaining for wildlife-inclusive development. In these densely developed areas, available open space without existing buildings and structures tends to have a high property value assigned to it, making it difficult to conserve existing available land for open space, let alone for wildlife (Anderson & West, 2006). Without the physical space to implement wildlife-inclusive design and planning, collaborative projects will not be able to happen. Even when greenspace can be conserved or incorporated into new developments, if it is not connected to a broader network of habitat, it may not be accessible to terrestrial wildlife. When possible, existing infrastructure can be retrofitted as wildlife corridors, trails and greenspace (see the New York City High Line and the Chicago 606 Trail for successful case studies; Gobster et al., 2017; Stalter, 2004). In densely built areas of cities, habitat for birds, bats and insects can be incorporated vertically via design features such as green roofs and living walls (Perini et al., 2013). Even existing structures can incorporate wildlife-inclusive features post-construction, including replacing non-native vegetation with native species, incorporating bat boxes and insect hotels on site, limiting light at night or using wildlife-friendly materials in renovations (Apfelbeck et al., 2020; Bhardwaj et al., 2020; Brittingham & Williams, 2000; Hanophy, 2009). Retrofitting an existing structure to include wildlife habitat elements presents an opportunity to observe how wildlife-inclusive design might result in tangible differences in wildlife health and occupancy, aligning with goals for both designers (i.e. having positive results to show clients) and scientists (i.e. testing the efficacy of wildlife-inclusive measures).

## 2.5 | Values and bias

Value and priority conflicts among stakeholders are common impediments to effective wildlife conservation (Frank et al., 2019; Leong et al., 2020; Peterson et al., 2002). These same conflicts were identified by UWIN Summit attendees as key barriers to successful wildlife-inclusive urban planning and design. More specifically, attendees reported that urban residents and officials often place lower priority on wildlife than other community interests. In fact, in many cases planners, designers and community members voice concerns regarding the perceived negative impacts wildlife may have in their communities including human safety, damage to infrastructure and aesthetics. For example, lighting along streets is common, and has been incorporated into urban planning as a safety feature, despite its negative impact on many wildlife species (Gaston et al., 2015; Longcore & Rich, 2004). Similarly, managing vegetation within urbanized areas for a 'well kept' appearance by pruning and landscaping can enhance visual appeal to some residents and clients (Turo & Gardiner, 2020), but have a negative effect on wildlife (Sisser et al., 2016). Summit attendees agreed that developing a comprehensive understanding of stakeholder's values towards wildlife and how these values ultimately affect their prioritization of wildlife-inclusivity could serve as mechanisms for wildlife persistence in urbanized landscapes.

In response to these challenges, Summit attendees proposed comprehensive stakeholder assessments to help understand the values that each participant in a project holds. Prior to engaging in wildlife-inclusive design, a comprehensive quantitative and qualitative wildlife value and bias assessment can be conducted (e.g. Wildlife Value Orientation Scale; Teel & Manfredo, 2010) with stakeholders including collaborating ecologists, designers and planners as well as members of the local community (Treves & Santiago-Ávila, 2020; Turo & Gardiner, 2020). The findings can be used to define engagement strategies, detect potential stakeholder conflict and identify under-represented groups (Apfelbeck et al., 2020; Teel & Manfredo, 2010). As suggested by the Summit attendees, this process also provides the opportunity for community members to have a role in the decision making and development process (Turo & Gardiner, 2020). This comprehensive assessment helps practitioners understand the values and biases that stakeholders, collaborators, and that they themselves hold, with the aim of fostering transparency, trust and respect.

# 3 | CONCLUSION

Despite some progress, there is a disconnect between the scientists that measure environmental phenomena and the designers and planners that shape both the social and physical urban landscape. This disconnect leads to research, policy and design that are not holistic, missing opportunities to create cities that benefit people, animals and our environment. The UWIN Summit exemplified the creativity, synergy and inventiveness that can come from collaboration between urban wildlife ecologists, planners and designers. However, attendees from this Summit represent a subset of professionals from these fields who are interested and willing to participate in transdisciplinary work. When applying transdisciplinary frameworks beyond this event, obstacles will inevitably be exacerbated, as collaborative values are not always shared among professionals. Nonetheless, these collaborations are essential to creating city landscapes that contribute to human–wildlife coexistence.

Progress requires changes in norms in all fields of expertise to ensure a sustained commitment to collective action. Each field misses fundamental components only afforded by their counterparts and, without all the functioning cogs, progress will likely hit major roadblocks. As cities house more and more of the global population, their importance in combating the biodiversity crisis intensifies. Harnessing the capabilities of planners, designers and ecologists through collaboration is fundamental to establishing cities that sustain human life and ensure the future of many other species.

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

## AUTHORS' CONTRIBUTIONS

C.A.M.K: conceptualization, writing—original draft, writing—review & editing, supervision, Project Administration; A.T.R. conceptualization, writing—original draft, writing—review & editing; H.A.S: Conceptualization, Writing—Review & Editing; T.S: Conceptualization, Writing—Original Draft, Writing—Review & Editing; M.F: Conceptualization, Writing—Review & Editing; M.H.M: Conceptualization, Writing—Original Draft, Writing— Review & Editing; J.S.L: Conceptualization, Writing—Original Draft, Writing—Review & Editing; I.T: Conceptualization, Writing—Original Draft; E.W.L: Conceptualization, Writing—Review & Editing; A.J.Z: Conceptualization, Writing—Original Draft; C.J.S: Conceptualization; S.M: Conceptualization, Writing—Original Draft, Writing—Review & Editing.

## DATA AVAILABILITY STATEMENT

This manuscript does not have associated data.

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