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Engaging urban residents in the appropriate actions to mitigate human–wildlife conflicts

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Abstract

Mitigating human–wildlife conflicts by altering human behaviors is critical to urban wildlife conservation. We investigated what actions urban residents are willing to take to mitigate human–wildlife conflicts in metropolitan Atlanta, one of the fastest growing metropolises in the United States (~6.1 million people, 21,690 km^2). In 2022, we administered online surveys to 1006 residents of metropolitan Atlanta to determine which measures they had adopted to mitigate conflicts with urban wildlife, elicit their stated willingness to adopt additional conflict mitigation measures, and identify determinants of current or potential implementation of mitigation measures. Respondents most frequently reported watching urban wildlife (63.0% of respondents). The most frequently reported conflicts were wildlife raiding trash cans (14.8%) and damaging landscaping (20.8%). In total, 342 respondents (34.0%) had not taken any action to mitigate conflicts with wildlife. Respondents who had taken action to prevent conflicts most often secured their trash by keeping cans indoors or locking the lid of the can (28.7%), kept pets (20.5%) and pet food (20.3%) indoors, and took trash out on the morning of collection (19.6%). Respondents who had not adopted conflict mitigation measures stated that they were likely to secure their trash or keep pets and pet food indoors if they considered these measures to be necessary. Prior conflicts with wildlife influenced both respondents' current efforts to mitigate conflicts with wildlife, and their stated willingness to adopt additional measures to mitigate human–wildlife conflicts. Risk sensitivity to zoonotic pathogen transmission increased both actual and intended adoption of conflict mitigation measures. Respondents' self-efficacy, beliefs about wildlife, and age also influenced their willingness to adopt conflict mitigation measures. Our results suggest that education and outreach about the need for conflict mitigation measures should highlight the importance and effectiveness of these measures in conserving wildlife, while also securing the well-being of humans and pets.

KEYWORDS

anthropogenic food conditioning, beliefs, hazing, risk perceptions, self-efficacy, social trust, wildlife value orientations

1 | INTRODUCTION

Over half of the human population lives in urban centers (United Nations, 2018). Growing urbanization has come at the cost of habitat loss and degradation, with natural areas being replaced by man-made infrastructure. Although urban spaces show lower levels of biodiversity (McKinney, 2008), they offer novel environments for many species that are both adaptable and tolerant of human presence (Lowry et al., 2013; Stillfried et al., 2017). Urbanization has altered phenotypic traits of urban wildlife, including increased nocturnality, changes in cognitive and problem-solving abilities, increased habituation to humans, and dietary changes (Schell et al., 2021). Wildlife such as coyotes (*Canis latrans*), deer (*Odocoileus* spp.), raccoons (*Procyon lotor*), Virginia opossums (*Didelphis virginiana*) as well as different species of raptors and herpetofauna have been successful in occupying urban niches and are increasingly recognized as integral to urban environments (Bateman et al., 2021; Hody & Kays, 2018; Mannan & Steidl, 2018). Their generalist traits allow them to use a broad range of habitat types and forage both natural and anthropogenic foods (Poessel et al., 2017). Unfortunately, wildlife that become reliant on anthropogenic food sources (e.g., trash, pet food) are at higher risk of malnutrition, inter-species competition, altered fitness, and changes to social and stress behaviors (Griffin et al., 2022). Because many urban wildlife species are a source of well-being for people, urban residents intentionally attract these species (e.g., birds) to public and private spaces through the provision of food (Griffin et al., 2022; Horn & Johansen, 2013; Mumaw et al., 2017). However, the use of urban spaces by wildlife also results in human–wildlife conflicts, especially when wildlife threaten the safety of people, pets and domestic animals (Bateman & Fleming, 2012; Poessel et al., 2013), damage property or backyards (Davison et al., 2008; Grubbs & Krausman, 2009), transmit pathogens (Bradley & Altizer, 2007), or cause vehicular collisions (Lopez et al., 2003).

The evolutionary impacts of human behaviors on wildlife are well documented, but selective pressures are particularly high in urban areas owing to anthropogenic landscape conversion (e.g., changes in vegetation cover and diversity), lethal removal of individual animals, high densities of pets and other domesticated animals, and provision of anthropogenic food sources (Schell et al., 2021). Translocating conflict wildlife is not an effective solution to resolve human–wildlife conflicts because translocation elevates stress and mortality rates in wildlife, contributes to pathogen transmission, and is very costly (White & Ward, 2010). Accordingly, mitigating human–wildlife conflicts by altering human behaviors is critical to wildlife conservation in urban areas (Balmford et al., 2021; Baruch-Mordo et al., 2009; Griffin et al., 2022; Schell et al., 2021). Using the case study of metropolitan Atlanta, United States (US), we investigated what actions urban residents are willing to take to mitigate conflicts with urban wildlife.

Metropolitan Atlanta is one of the fastest growing metropolises in the United States, encompassing ~6.1 million people who occupy 8376 square miles (21,690 km^2; U.S. Census Bureau, 2020). It is a racially diverse city, in which the largest racial groups are white (44.7%), Black or African American (hereafter, Black; 35.7%), Hispanic or Latino (hereafter, Hispanic; 11.3%), and Asian (6.7%). Increased development (~34% of the land area) has resulted in forest loss and fragmentation (Lo & Yang, 2002; Miller, 2012), although almost half of the metropolitan area remains under forest cover. Owing to its tree cover, prevalence of green spaces, and proximity to several wilderness areas, residents of metropolitan Atlanta interact with multiple wildlife species. In 2021, the Georgia Department of Natural Resources (GADNR) received 5939 calls related to human–wildlife interactions, of which 3547 calls (59.7%) were from metropolitan Atlanta. These reports largely included complaints about wildlife presence on residents' properties, threats to humans or pets, property damage by wildlife, and concerns about sick, injured, or orphaned wildlife (GADNR Dashboard; https://www.arcgis.com/apps/dashboards/f093301a3122436082ccb1ff7ecbcaba).

In common with other state wildlife agencies (Pienaar et al., 2015), GADNR recommends that urban residents mitigate human–wildlife conflicts by hazing wildlife (i.e., chasing an animal from an area, person, or a resource) or removing anthropogenic food sources. These nonlethal methods for preventing wildlife from becoming habituated to humans or reliant on anthropogenic foods are usually easy to implement and can therefore be applied by individuals, without the involvement or assistance of management agencies. Hazing techniques such as the use of scent (olfactory barriers), noise, water, rubber bullets, or motion-activated scare devices (Sampson & Van Patter, 2020) have shown some success in establishing or

reinforcing wildlife's avoidance of humans (Blackwell et al., 2016; Greggor et al., 2020; Young et al., 2019). However, hazing strategies are less effective when natural food resources are scarce because wildlife's tolerance of human-associated risk is enhanced (Baruch-Mordo et al., 2008). As such, it is critical that urban residents secure anthropogenic food sources, for example, by keeping trash indoors until the morning of collection, locking trash cans to prevent wildlife accessing the contents, cleaning grills, and not providing wildlife with seed or other food (Barrett et al., 2014; Pienaar et al., 2015). Similarly, pets and other domestic animals are less likely to be threatened, attacked, or killed if urban residents engage in responsible behaviors, for example, keeping dogs on a leash when walking in green spaces and keeping pets and pet food inside their residence (Alexander & Quinn, 2011; Pienaar et al., 2015; Washburn, 2018). However, repeated intrusions by wildlife onto urban properties may require additional, more costly or time-consuming strategies such as changes to landscaping and the construction of fences.

Pro-environmental behavior change, including urban residents' adoption of appropriate behaviors to prevent human–wildlife conflicts, depends on accurate perceptions about the mitigation potential of different behaviors, perceived effort, inconvenience and cost associated with new behaviors, frequency of human–wildlife conflicts, values (i.e., trans-situational goals and principles that guide human behavior), self-efficacy, risk perceptions, trust in wildlife agencies, and sociodemographic characteristics (Cologna et al., 2022; Lischka et al., 2020; Manfredo et al., 2016; Truelove & Gillis, 2018). Adoption of conflict mitigation measures has been found to be positively correlated with the frequency of human–wildlife conflicts within a resident's neighborhood, which may increase risk perceptions related to human–wildlife conflicts (Lischka et al., 2020). Given that urban wildlife carry zoonotic pathogens that may transmit to companion animals and humans, people's disease risk perceptions may increase human–wildlife conflicts (Schell et al., 2021; Soulsbury & White, 2015), thereby influencing people's adoption of conflict mitigation measures. However, individuals who perceive greater benefits from wildlife may be less likely to adopt conflict mitigation measures because they are more tolerant of human–wildlife conflicts (Lischka et al., 2020).

Values, which serve as standards for evaluating the desirability of human behaviors, play a pivotal role in shaping individuals' adoption of conflict mitigation measures (Manfredo et al., 2016). We focus on wildlife value orientations, which are general patterns of basic beliefs pertaining to wildlife and human–wildlife relationships (Jacobs et al., 2014). Two main wildlife value orientations have emerged in the public, namely "domination" and "mutualism" (Manfredo et al., 2009; Teel et al., 2010). Individuals with a domination value orientation believe wildlife should be managed for human benefit and are more likely to consider actions that result in the death or harm of wildlife as acceptable (Jacobs et al., 2014). By contrast, individuals with a mutualism wildlife value orientation view wildlife as deserving of rights and care and engage in behaviors that they believe will enhance the welfare of individual wildlife (e.g., providing wildlife habitat; Jacobs et al., 2014).

Self-efficacy, or an individual's confidence in their information, skills, opportunities, and resources for managing human–wildlife conflicts, also determines the adoption of mitigation measures (Bandura, 1977; Klöckner, 2013). Additionally, trust in scientists and agencies can influence willingness to adopt recommended conflict mitigation behaviors (Cologna et al., 2022), but conversely individuals who believe that agencies are appropriately managing wildlife may view individual actions to mitigate conflicts with wildlife as unnecessary (Lischka et al., 2020). Lastly, factors such as gender, age, and education levels can shape people's risk perceptions and wildlife tolerance (Kimmig et al., 2020; Wald & Jacobson, 2013), which in turn may impact their adoption of conflict mitigation measures.

We administered surveys to residents of metropolitan Atlanta to (1) determine which conflict mitigation measures they have adopted, (2) measure individuals' perceptions of the effectiveness of mitigation measures, (3) ascertain reasons for not implementing mitigation measures, (4) elicit individuals' stated willingness to adopt additional conflict mitigation measures, and (5) identify determinants of individuals' current or potential future implementation of mitigation measures. Based on the existing literature, we predicted that individuals' adoption of measures to mitigate human–wildlife conflicts would depend on their current interactions with urban wildlife, beliefs, risk perceptions related to pathogen transmission, self-efficacy, trust in GADNR to manage wildlife, and demographic characteristics. Our study responds to the call for more research on the understudied topics of human–wildlife interactions in urban ecosystems and how changes in people's behaviors can be attained to reduce the conservation impacts of human–wildlife conflicts (Magle et al., 2012; McCance et al., 2017; Schell et al., 2020, 2021).

2 | METHODS

2.1 | Survey design

We designed an online questionnaire to be administered to residents of metropolitan Atlanta. In addition to

collecting data on respondents' gender, age, education level, income level, and race/ethnicity, we asked how many other people lived in the household (including children), whether respondents owned pets (including the type of animal they owned), how long they had lived in their current neighborhood, and whether respondents had yards. We tailored questions pertaining to interactions with urban wildlife, based on whether respondents lived with other household members, owned pets, and had control over landscaping at their place of residence. Prior to asking respondents about their interactions with urban wildlife, we presented them with images of common urban wildlife in metropolitan Atlanta, namely: bats (*Chiroptera* spp.); bobcats (*Lynx rufus*); coyotes; deer; foxes (*Vulpes vulpes*, *Urocyon cinereoargenteus*); hawks (*Buteo* spp.); hummingbirds (*Trochilidae* spp.); opossums; owls (*Strigiformes* spp.); rabbits (*Sylvilagus* spp.); raccoons; snakes (*Colubridae* spp.); squirrels/chipmunks (*Sciuridae* spp.); and turtles (*Terrapene* spp.). This ensured that all respondents were presented with an identical pictorial definition of urban wildlife.

To measure respondents' prior interactions with urban wildlife around their residence or neighborhood, we asked whether they had watched or fed wildlife, had experienced property damage by wildlife, and whether any members of their household, their pets or they had been threatened or injured by wildlife. We then asked respondents to indicate whether they had taken measures to prevent human–wildlife conflicts (yes = 1, no = 0). These measures included the use of treatments/sprays in the yard, securing trash by keeping trash cans indoors or locking the lid of the can, taking out trash on the morning of collection, hazing wildlife using noise, water hoses, paintball guns, motion-activated sprinklers, and motion-activated lights to scare wildlife away from the respondent's property, keeping pets and pet food indoors, removing certain trees or plants from their property, and fencing their property to prevent wildlife from entering the property. If respondents had implemented conflict mitigation measures, then we asked them how effective these measures had been in preventing conflicts (not at all successful = 1, slightly successful = 2, moderately successful = 3, very successful = 4, not sure = 0). If respondents had not implemented conflict mitigation measures, then we asked them how likely they were to adopt these measures in the future (very unlikely = 1, unlikely = 2, neither unlikely nor likely = 3, likely = 4, very likely = 5). If respondents stated that they were unlikely or very unlikely to implement a measure, then we asked them why (not my responsibility, too expensive, not ethical, not effective, not necessary).

We measured respondents' risk perceptions pertaining to wildlife diseases by asking respondents how concerned they were that wildlife in their neighborhood would transmit pathogens to their pets, members of their community, household members, and themselves (not at all concerned = 1, slightly concerned = 2, moderately concerned = 3, concerned = 4, very concerned = 5). To assess respondents' self-efficacy we asked them whether they agreed (strongly disagree = −2, disagree = −1, neither agree nor disagree = 0, agree = 1, strongly agree = 2) that they had the ability to prevent wildlife entering their property, keep their pets safe from wildlife, keep household members safe from wildlife, and keep themselves safe from wildlife. We only presented appropriate disease risk perceptions and self-efficacy statements, based on respondents' pet ownership and number of household members. We used the wildlife value orientation scale to measure whether respondents were traditionalists who believed that wildlife should be used and managed primarily for human benefit (domination value orientation) or mutualists who favor human–wildlife coexistence, viewing wildlife as deserving of rights and care (Chase et al., 2016). Finally, we measured respondents' trust in GADNR by asking them whether they agreed (strongly disagree to strongly agree) that the agency (1) has the resources and expertise to manage human–wildlife conflicts, (2) is responsive toward requests for assistance on wildlife issues, (3) provides adequate information on how to mitigate human–wildlife conflicts, and (4) is effective in protecting wildlife in Georgia. Recognizing that respondents may not have interacted with GADNR in the past, we allowed them to indicate if they "didn't know" (coded as 0).

We pretested our survey with 27 people, including experts in human dimensions research, wildlife ecologists, and members of the public from the metropolitan Atlanta region. Pre-test participants varied in age and education levels and were representative of the racial composition of metropolitan Atlanta. The Institutional Review Board at the University of Georgia reviewed our final survey and determined that it was exempt. All respondents were presented with informed consent language before they participated in the study.

2.2 | Data collection

We hired Qualtrics Research Services to administer the survey to 1006 metropolitan Atlanta residents. We provided Qualtrics with demographic quotas for metropolitan Atlanta based on the United States Census to obtain a final sample that was representative in terms of county of residence, race, gender, age, income, and education level. We collected data from January to April 2022. To ensure data quality, we included attention checks and speed checks. However, internet-based surveys may lack

external validity because individuals who do not use the internet are excluded from the sample (Grewenig et al., 2023).

2.3 | Data analysis

We performed all statistical analyses with SPSS version 28.0 and R version 4.2.1. First, we performed factor analysis to determine whether ordinal items could be combined to measure socio-psychological constructs (e.g., risk perceptions, self-efficacy, trust in GADNR, wildlife value orientations). We concluded that items could be combined to measure a construct if Cronbach's alpha ≥.7 (a measure of internal consistency and inter-item reliability; Gliem & Gliem, 2003) and the items loaded onto a factor with an eigenvalue ≥1 (Joliffe & Morgan, 1992). We used varimax rotation to ensure that factors were orthogonal. After weighting each item by its factor loading, we summed items that loaded onto retained, orthogonal factors to generate composite scores (i.e., measures of socio-psychological constructs).

We used logistic regression analysis to determine which variables influenced respondents' current adoption of conflict mitigation measures, and ordinal logistic regression analysis to determine which variables influenced respondents' stated willingness to adopt additional mitigation measures. We excluded conflict-mitigation measures that were implemented by less than 10% of respondents from the logistic regression analysis. Identical variables were included in both analyses, namely respondents' demographic and socio-psychological characteristics, and which human–wildlife interactions respondents had experienced. Both stepwise model reduction and a comparison of all possible models using the MuMIn package were conducted to determine best-fit models. We identified best-fit models based on the Akaike Information Criterion (AIC; Burnham & Anderson, 2002), that is, the best-fit model had the lowest AIC. We conducted model averaging when there were multiple models that were within AIC ≤ 2 of the lowest AIC, that is, we averaged the coefficients across these models (Burnham et al., 2011). We considered a coefficient to be statistically significant at $p \leq .05$.

3 | RESULTS

Most respondents (57.1%) identified as female (Table S1 in Supplementary Information). Respondents most frequently reported that they were Black or African American (54.1%) or white (42.8%). The median age category for respondents was 35–44 years of age, and the median household income category was $50,000–$74,999/year. The median education level for respondents was an associate's degree or some college (with no degree). In total, 231 respondents (23.0%) had children living in their household. Most respondents lived in a house (68.2%) with a yard (67.1%; Table S1). Respondents' yards often contained lawn or sod, shrubs and bushes, trees, and flowering plants, thereby attracting and providing habitat for urban wildlife. Over half of respondents ($n = 562$, 55.9%) owned pets, predominantly dogs. The largest share of respondents (32.9%) had lived in their neighborhood for ≥11 years. Our sample was representative of the larger population of metropolitan Atlanta both spatially and in terms of demographic composition, with the following exceptions. We oversampled people above the age of 55 years (31% of our sample vs. 23% as per the US Census) and undersampled people with an income greater than $100,000/year (18% of our sample vs. 27% as per the US Census). We also oversampled residents of Cobb, DeKalb, Gwinnett, and Henry Counties (2%–5% more than census data) and undersampled residents of Fulton County (8% less than census data).

The most frequent human–wildlife interactions respondents reported were that they watched wildlife around their residence or neighborhood ($n = 634$,

TABLE 1 Respondents' interactions with wildlife in their neighborhood, metropolitan Atlanta, United States, 2022 ($n = 1006$).

Human–wildlife interaction	Number	Percent
I put out food or seed for wildlife to eat	302	30.0
Wildlife have damaged my landscaping	209	20.8
Wildlife have entered my home	90	9.0
I watch wildlife around my residence or neighborhood	634	63.0
Wildlife eat my pets' food	54	5.4
Wildlife raid my trash cans	149	14.8
Wildlife have threatened or attacked my pets	36	3.6
Members of my household have felt threatened by wildlife	66	6.6
Members of my household have been scratched/bitten by wildlife	6	0.6
I have felt threatened by wildlife	86	8.6
I have been scratched/bitten by wildlife	9	0.9
Members of my household have had a vehicle collision with wildlife	81	8.1
I have had a vehicle collision with wildlife	67	6.7

TABLE 2 Respondents' perceptions of the effectiveness of different measures in mitigating negative interactions with wildlife, metropolitan Atlanta, Georgia, United States, 2022.

			Not at all successful		Slightly successful		Moderately successful		Very successful		Not sure	
Measure	**Number of respondents**	**Median response**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Treatments/sprays	150	Moderately successful	8	5.3	46	30.7	58	38.7	34	22.7	4	2.7
Keep trash cans indoors or lock lid until collection	289	Very successful	3	1.0	32	11.1	78	27.0	168	58.1	8	2.8
Take trash out on morning of collection	197	Very successful	3	1.5	19	9.6	34	17.3	132	67.0	9	4.6
Use noise to scare away wildlife	140	Moderately successful	2	1.4	33	23.6	43	30.7	59	42.1	3	2.1
Use a water hose to scare away wildlife	47	Moderately successful	1	2.1	9	19.1	20	42.6	16	34.0	1	2.1
Use a paintball gun to scare away wildlife	17	Moderately successful	1	5.9	0	0.0	9	52.9	7	41.2	0	0.0
Motion-activated lights	69	Moderately successful	3	4.3	17	24.6	29	42.0	18	26.1	2	2.9
Motion activated sprinklers	12	Very successful	0	0.0	0	0.0	5	41.7	7	58.3	0	0.0
Keep pets indoors	206	Very successful	2	1.0	11	5.3	35	17.0	150	72.8	8	3.9
Keep pet food indoors	204	Very successful	0	0.0	9	4.4	20	9.8	169	82.8	6	2.9
Remove trees or plants from property	58	Very successful	2	3.4	6	10.3	16	27.6	33	56.9	1	1.7
Fence property to exclude wildlife	54	Very successful	1	1.9	6	11.1	16	29.6	29	53.7	2	3.7

63.0%), and put out food or seed for wildlife to eat ($n = 302$, 30.0%, Table 1). The most frequently reported conflicts with wildlife were wildlife raiding trash cans ($n = 149$, 14.8%) and damaging landscaping ($n = 209$, 20.8%). In total, 342 respondents (34.0%) stated that they had not taken any action to mitigate conflicts with wildlife. Respondents who had taken action to prevent human–wildlife conflicts indicated that they secured their trash by keeping cans indoors or locking the lid of the can ($n = 289$, 28.7%), kept pets ($n = 206$, 20.5%) and pet food ($n = 204$, 20.3%) indoors, only took trash out on the morning of collection ($n = 197$, 19.6%), used treatments or sprays ($n = 150$, 14.9%), noise ($n = 140$, 13.9%), motion-activated lights ($n = 69$, 6.9%), a water hose ($n = 47$, 4.7%), a paintball gun ($n = 17$, 1.7%), or motion-activated sprinklers ($n = 12$, 1.2%) to haze wildlife, removed trees or plants from their property ($n = 58$, 5.8%), or fenced their property to exclude wildlife ($n = 54$, 5.4%). On average, respondents considered securing and taking trash out on the morning of collection, the installation of motion-activated sprinklers and fences, keeping pets and pet food indoors, and the removal of trees and plants very successful in mitigating conflicts with wildlife (Table 2). On average, respondents considered all other conflict mitigation measures to be moderately successful.

Most respondents stated they were likely to secure their trash or keep pets and pet food indoors if they were not already engaging in these measures to prevent conflicts with wildlife (Table 3). On average, respondents were neither likely nor unlikely to take trash out on the morning of collection, install motion-activated lights, or use noise to haze wildlife. Most respondents were unlikely to use a water hose, treatments/sprays, or motion-activated sprinklers to deter wildlife, a fence to exclude wildlife from their property, or to remove trees and plants from their property to avoid attracting wildlife. Respondents were least likely to use a paintball gun to haze wildlife. Respondents who stated that they were unlikely to engage in conflict mitigation measures most

TABLE 3 Respondents' stated willingness to implement measures to prevent human–wildlife conflicts, metropolitan Atlanta, Georgia, United States, 2022.

Measure	Number of respondents	Median response	Very unlikely		Unlikely		Neither unlikely nor likely		Likely		Very likely	
			No.	%	No.	%	No.	%	No.	%	No.	%
Treatments/sprays	856	Unlikely	327	38.2	182	21.3	203	23.7	105	12.3	39	4.6
Keep trash cans indoors or lock lid until collection	717	Likely	110	15.3	82	11.4	157	21.9	200	27.9	168	23.4
Take trash out on morning of collection	809	Neither unlikely nor likely	134	16.6	111	13.7	212	26.2	214	26.5	138	17.1
Use noise to scare away wildlife	866	Neither unlikely nor likely	234	27.0	177	20.4	217	25.1	176	20.3	62	7.2
Use a water hose to scare away wildlife	959	Unlikely	370	38.6	233	24.3	207	21.6	109	11.4	40	4.2
Use a paintball gun to scare away wildlife	989	Very unlikely	634	64.1	170	17.2	118	11.9	36	3.6	31	3.1
Motion-activated lights	937	Neither unlikely nor likely	286	30.5	151	16.1	198	21.1	231	24.7	71	7.6
Motion activated sprinklers	663	Unlikely	314	47.4	156	23.5	103	15.5	71	10.7	19	2.9
Keep pets indoors	356	Likely	57	16.0	37	10.4	78	21.9	106	29.8	78	21.9
Keep pet food indoors	358	Likely	51	14.3	13	3.6	61	17.0	98	27.4	135	37.7
Remove trees or plants from property	873	Unlikely	340	39.0	188	21.5	209	23.9	102	11.7	34	3.9
Fence property to exclude wildlife	621	Unlikely	210	33.8	119	19.2	132	21.3	102	16.4	58	9.3

frequently argued that these measures were not necessary (51.7%–73.1% of respondents who stated they were "very unlikely" or "unlikely" to implement measures; Table 4). However, respondents also stated that the installation of fences or motion activated sprinklers was too expensive (>24%), while the use of treatments/sprays, water hoses, and paintball guns was unethical (>22%). Fewer respondents considered mitigation measures to be ineffective or not their responsibility.

Respondents demonstrated low risk sensitivity (Table S2) to neighborhood wildlife transmitting pathogens to themselves, members of their household, their pets, and members of their community, with most respondents (≥60.7%) being not at all or slightly concerned about wildlife diseases. Factor analysis indicated that respondents' risk sensitivity (eigenvalue = 1.824, Cronbach's alpha = .9) pertaining to pathogen transmission to themselves and community members could be treated as a single construct. Most respondents (≥78.4%) agreed that they had the ability to keep themselves, members of their household, and their pets safe from wildlife (Table S3). Factor analysis (eigenvalue = 1.353, Cronbach's alpha = .79) indicated that respondents' perceived ability to keep themselves and their property safe from wildlife could be treated as a single construct, "self-efficacy." On average, respondents agreed that GADNR has the appropriate resources to manage wildlife and the necessary expertise to manage human–wildlife conflicts (52.4%–56.0% of respondents agreed with these statements), but they neither agreed nor disagreed that GADNR provided adequate information about preventing human–wildlife conflicts, responded to requests for assistance on wildlife issues, and had been effective in protecting wildlife (51.7%–56.3% of respondents neither agreed nor disagreed with these statements). Based on factor analysis (eigenvalue = 3.378, Cronbach's alpha = .88), we combined these statements to measure respondents' "trust in the state wildlife agency" (Table S4).

Most respondents agreed that they value the sense of companionship they receive from animals (59.8%), people

TABLE 4 Reasons why respondents were unwilling to implement measures to mitigate human–wildlife conflicts, metropolitan Atlanta, Georgia, United States, 2022.

		Not my responsibility		Too expensive		Not ethical		Not effective		Not necessary		Other	
Measure	Number of respondents	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Treatments/sprays	509	101	19.8	32	6.3	161	31.6	32	6.3	268	52.7	15	2.9
Keep trash cans indoors or lock lid until collection	192	24	12.5	4	2.1	4	2.1	9	4.7	140	72.9	17	8.9
Take trash out on morning of collection	245	25	10.2	3	1.2	11	4.5	30	12.2	179	73.1	14	5.7
Use noise to scare away wildlife	411	43	10.5	5	1.2	59	14.4	38	9.2	282	68.6	19	4.6
Use a water hose to scare away wildlife	603	64	10.6	12	2.0	137	22.7	77	12.8	377	62.5	18	3.0
Use a paintball gun to scare away wildlife	804	64	8.0	32	4.0	374	46.5	44	5.5	416	51.7	29	3.6
Motion-activated lights	437	58	13.3	68	15.6	26	5.9	52	11.9	270	61.8	12	2.7
Motion activated sprinklers	470	25	5.3	114	24.3	35	7.4	42	8.9	289	61.5	11	2.3
Keep pets indoors	94	3	3.2	3	3.2	6	6.4	10	10.6	65	69.1	12	12.8
Keep pet food indoors	64	6	9.4	1	1.6	3	4.7	5	7.8	42	65.6	11	17.2
Remove trees or plants from property	528	89	16.9	69	13.1	41	7.8	46	8.7	348	65.9	14	4.0
Fence property to exclude wildlife	329	23	7.0	94	28.6	6	1.8	24	7.3	200	60.8	15	4.6

should strive for a world where humans and wildlife can live side by side without fear (51.3%), they care about animals as much as they do about other people (51.6%), and they view all living things as part of one big family (51.1%; Table S5). Respondents most strongly disagreed that wildlife are on earth primarily for people to use (52.8% of respondents disagreed with this statement). After conducting factor analysis, we combined the wildlife value orientation items into three constructs, namely "mutualism" (eigenvalue = 4.746, Cronbach's alpha = .88); "hunting beliefs" (eigenvalue = 2.227, Cronbach's alpha = .78); and "utilitarian views of wildlife" (eigenvalue = 1.511, Cronbach's alpha = .73).

3.1 | Determinants of respondents' existing actions to prevent human–wildlife conflicts

Prior conflicts with wildlife influenced respondents' current efforts to mitigate conflicts with wildlife (Table 5). Respondents who reported that wildlife had raided their trash cans were more likely to secure their trash, take trash out on the morning of pickup, and use noise to haze wildlife. Respondents whose pets had been threatened or attacked by wildlife were more likely to keep their pets indoors, and respondents who reported that wildlife had eaten their pets' food were more likely to keep pet food indoors and use noise to haze wildlife. Respondents who put out feed for wildlife were more likely to keep pets and pet food indoors. Respondents who felt threatened by wildlife were more likely to use noise to haze wildlife, while respondents whose household members had felt threatened by wildlife were more likely to keep pets indoors and use treatments/sprays in their yards. Respondents whose landscaping had been damaged by wildlife were more likely to use treatments/sprays, and noise to keep wildlife away from their property. Respondents who reported that wildlife had entered their home were more likely to use treatments/sprays, secure their trash, and keep pet food indoors. Those individuals who watched wildlife around their home or neighborhood were more likely to secure their trash and take out the trash on the morning of collection.

Risk sensitivity increased respondents' adoption of conflict mitigation measures. Concerns about disease risks to themselves and their community increased the likelihood that respondents secured their trash, and took trash out on the morning of collection whereas concerns about pathogen transmission to pets increased the likelihood that respondents used noise to haze wildlife, and kept pets and pet food indoors. Respondents who

TABLE 5 Logistic regression analysis of respondents' adoption of measures to mitigate human–wildlife conflicts, metropolitan Atlanta, Georgia, United States, 2022.

	Treatments/ sprays	Keep trash cans indoors or lock lid until collection	Take trash out on morning of collection	Use noise to scare away wildlife	Keep pets indoors	Keep pet food indoors
Constant	−2.18***	−2.15***	−2.04***	−1.64***	−1.04***	−1.70***
Human–wildlife interactions						
Wildlife raided trash cans		1.36***	1.23***	1.06***		
Wildlife threatened or attacked pets					1.30**	0.64
Wildlife have eaten pets' food				0.73*		1.10***
Wildlife damaged landscaping	1.19***	0.32	0.28	0.73**		
Wildlife entered home	1.02***	0.57*			0.52	0.77**
Respondent puts out food or seed for wildlife to eat					0.51**	0.39*
Watch wildlife around home or neighborhood		0.68***	0.47**			0.32
Members of household felt threatened by wildlife	0.75*				1.24***	
Members of household scratched or bitten by wildlife	1.90					
Respondent felt threatened by wildlife				0.74**		
Respondent scratched by wildlife				1.19		
Risk sensitivity[a]						
Self and community		0.33***	0.35***			
Pets	0.51			0.87**	1.22***	1.34***
Household members					−0.45	
Self-efficacy[b]						
Self and property				0.26		0.30*
Household members					−0.92	
Wildlife value orientations						
Mutualism					0.24*	0.27*
Hunting beliefs	0.24*					−0.25*
Utilitarian views	0.31*	−0.19		0.24	−0.30**	−0.28*

(Continues)

TABLE 5 (Continued)

	Treatments/ sprays	Keep trash cans indoors or lock lid until collection	Take trash out on morning of collection	Use noise to scare away wildlife	Keep pets indoors	Keep pet food indoors
Trust in government		0.17*	0.16		0.17	
Own pets		0.35*		−0.48*		
Yard at residence		0.73*				
Duration of residency		0.03				0.05
Gender[c]	−0.36				0.26	
Age		−0.01*		−0.01*	−0.01*	−0.01
Black/African American					−0.90***	−0.91***
Hispanic	−1.14					
N	150	289	197	140	206	204
Log-likelihood[d]	−377.97	−529.49	−458.88	−353.13	−433.06	−423.71
AIC[d]	775.93	1082.98	929.76	728.25	894.11	875.42

[a]Factor analyzed variable combining 2 statements associated with concern related to disease transmission for self and community. Risk sensitivity for household members and pets was coded as "concerned" or "very concerned" that wildlife will transmit disease = 1; "not at all," "slightly" and "moderately concerned" coded as 0.
[b]Factor analyzed variable combining 2 statements associated with ability to keep self and property safe from wildlife. Self-efficacy associated with household members was coded as "strongly disagree" or "disagree" that the respondent had the ability to keep their household members safe = 1; "neither disagree nor agree," "agree," and "strongly agree" coded as 0.
[c]Female = 1; male = 0; prefer not to say = 0.
[d]Reported AIC and log likelihood from the model with the lowest AIC. Model averages calculated for models within AIC ≤2 of the model with the lowest AIC.
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

expressed higher self-efficacy about their ability to protect themselves and their property from wildlife were more likely to keep pet food indoors. Respondents' beliefs about how humans and wildlife should interact also influenced their adoption of conflict mitigation measures. Mutualists were more likely to keep pets and pet food indoors, whereas respondents with hunting beliefs and utilitarian views of wildlife were less likely to keep pets and pet food indoors. Hunting beliefs and utilitarian views of wildlife increased the likelihood that respondents used treatments/sprays.

Older respondents were less likely to secure their trash, use noise to haze wildlife, or keep their pets indoors. Black respondents were less likely to keep pets and pet food indoors. Respondents with yards were more likely to secure their trash. Respondents with pets were more likely to secure their trash but less likely to use noise to haze wildlife. Respondents who expressed trust in GADNR were more likely to secure their trash.

3.2 | Determinants of respondents' willingness to adopt actions to prevent human–wildlife conflicts

Respondents' prior interactions with wildlife also influenced their stated willingness to adopt measures to mitigate human–wildlife conflicts (Table 6). Respondents who had experienced damage to their landscaping were more willing to secure their trash, use noise to deter wildlife, and keep pet food indoors. Respondents whose trash had been raided by wildlife were more willing to use a water hose to deter wildlife and to keep pets indoors. Respondents who felt threatened by wildlife were more willing to secure and take out trash on the morning of pickup, fence their property to exclude wildlife, and use noise, paintball guns and motion-activated lights to deter wildlife. Respondents who reported that wildlife had threatened or attacked their pets were less willing to secure their trash, while respondents who reported that wildlife had eaten their pets' food were less willing to keep pet food indoors. If respondents had experienced wildlife entering their home then they were less willing to put out trash on the morning of pickup and use paintball guns to haze wildlife. Respondents who fed wildlife were less willing to keep pet food indoors, whereas respondents who watched wildlife were less willing to use water hoses, paintball guns or treatments/sprays to keep wildlife from their property.

Risk sensitivity related to pathogen transmission to themselves and their community increased respondents' willingness to adopt all mitigation measures, with the exception of keeping pets and pet food indoors. However, respondents who were concerned about wildlife disease

TABLE 6 Ordinal logistic regression analysis of respondents' willingness to adopt measures to mitigate human–wildlife conflicts, metropolitan Atlanta, Georgia, United States, 2022.

	Sprays	Secure trash	Put out trash on morning of collection	Noise	Water	Paintball gun	Sprinkler	Lights	Keep pets indoors	Keep pet food indoors	Remove plants	Fence
Human–wildlife interactions												
Wildlife raided trash cans					0.48**				0.66*	0.50		−0.42
Wildlife threatened or attacked pets		−1.02*										
Wildlife have eaten pets' food									−0.69	−1.20**		
Wildlife damaged landscaping		0.40*		0.41*						0.54*	0.26	
Wildlife entered home			−0.61**			−0.53*	−0.43					
Respondent puts out food or seed for wildlife to eat										−0.51*	−0.22	
Watch wildlife around home or neighborhood	−0.36**				−0.36**	−0.49***						
Members of household felt threatened by wildlife												−0.63
Respondent felt threatened by wildlife		0.60*	0.57*	0.60*		0.57*		0.61*				0.82*
Respondent scratched by wildlife		1.74										
Risk sensitivity[a]												
Self and community	0.48***	0.37***	0.30***	0.38***	0.35***	0.27***	0.30***	0.33***			0.49***	0.48***
Pets									0.63*	0.56*		
Self-efficacy[b]												
Self and property		0.39***	0.28**			−0.26**				0.30*		0.49***
Household members												0.72
Pets			1.16									1.48*
Wildlife value orientations												

(Continues)

TABLE 6 (Continued)

	Sprays	Secure trash	Put out trash on morning of collection	Noise	Water	Paintball gun	Sprinkler	Lights	Keep pets indoors	Keep pet food indoors	Remove plants	Fence
Mutualism	−0.17*	−0.18*										
Hunting beliefs	0.14				−0.15*			−0.17*		−0.18	0.13	
Utilitarian views	0.30***		0.19*	0.21*	0.27**	0.61***	0.20*	0.14	0.19	−0.19		
Trust in government		0.36***	0.12					0.19**				
Own pets								0.21				
Yard at residence	0.42					−0.48						
Duration of residency		−0.03		−0.03			−0.05*	−0.02	−0.05*	−0.05		
Gender[c]		0.53***	0.41**	0.36**								
Age	−0.02***		−0.01	−0.02***	−0.02***	−0.01*	−0.02***	−0.02***			−0.02***	−0.02***
Education		−0.08*	0.06				0.07			0.07		
Income					0.01***		0.004	0.004*			0.004	
Black/African American	0.23					0.21	0.36*	0.27				0.42**
Hispanic				−0.87*				−0.66		−0.84		
Intercepts												
β_1	−1.23***	−2.83***	−1.25*	−1.80***	−1.03***	−0.40	−0.34	−1.44***	−1.89***	−1.66*	−1.33***	−1.64***
β_2	−0.26	−2.07***	−0.43	−0.84***	0.04	0.58	0.75	−0.70*	−1.23***	−1.37	−0.38	−0.74**
β_3	1.08**	−1.03*	0.73	0.33	1.30***	1.83***	1.79**	0.26	−0.23	−0.39	0.99***	0.35
β_4	2.61***	0.35	2.13***	2.02***	2.82***	2.68***	3.52***	2.16***	1.18***	0.85	2.56***	1.70***
N	509	192	245	411	603	804	470	437	94	64	528	329
Log-likelihood[d]	−1163.8	−1069.5	−1237.7	−1278.9	−1308.9	−993.6	−837.8	−1368.6	−540.5	−486.2	−1186.6	−890.8
AIC[d]	2351.5	2169.0	2503.4	2581.8	2639.7	2013.2	1699.6	2767.2	1099.1	1002.4	2393.3	1807.6

[a]Factor analyzed variable combining 2 statements associated with concern related to disease transmission for self and community. Risk sensitivity for household members and pets was coded as "concerned" or "very concerned" that wildlife will transmit disease = 1; "not at all," "slightly" and "moderately concerned" coded as 0.

[b]Factor analyzed variable combining 2 statements associated with ability to keep self and property safe from wildlife. Self-efficacy associated with household members and pets was coded as "strongly disagree" or "disagree" that the respondent had the ability to keep their household members or pets safe = 1; "neither disagree nor agree," "agree," and "strongly agree" coded as 0.

[c]Female = 1; male = 0; prefer not to say = 0.

[d]Reported AIC and log likelihood from the model with the lowest AIC. Model averages calculated for models within AIC ≤2 of the model with the lowest AIC.

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

risks to pets were more willing to keep pets and pet food indoors. Respondents who stated that they were able to keep themselves and their property safe from wildlife were more willing to secure and take out trash on the morning of collection, keep pet food indoors and fence their property, but were less willing to use a paintball gun to haze wildlife. Respondents who did not believe that they had the ability to keep their pets safe from wildlife were more willing to fence their property. Respondents who expressed trust in GADNR were more willing to secure their trash and use motion-activated lights to haze wildlife. Mutualists were less willing to secure their trash and use treatments/sprays, whereas respondents with strong hunting beliefs were less willing to use water hoses and motion-activated lights to haze wildlife. Respondents with utilitarian beliefs related to wildlife were more willing to use treatments/sprays, noise, water hoses, paintball guns and motion-activated sprinklers to haze wildlife, as well as being more willing to put out trash on the morning of collection.

Women were more willing to secure trash, take out trash on the morning of collection, and use noise to deter wildlife. Older respondents were less willing to use treatments/sprays, noise, water hoses, paint guns, and motion-activated lights and sprinklers to haze wildlife, or to remove plants and fence their property. Respondents with higher levels of education were less willing to secure their trash, whereas higher-income respondents were more willing to use water hoses and motion-activated lights to haze wildlife. Hispanic respondents were less willing to use noise to deter wildlife, while Black respondents were more willing to use motion-activated sprinklers and to fence their property to keep wildlife off their property. Respondents who had lived in their neighborhood for a longer duration were less willing to use motion-activated sprinklers to deter wildlife and to keep pets indoors.

4 | DISCUSSION

With growing human populations, further expansion of urban areas will favor those wildlife species that are tolerant of humans and develop the necessary traits to inhabit urban environments (Johnson & Munshi-South, 2017; Perry et al., 2020). Accordingly, it is important to reduce selective pressures on wildlife, owing to lethal removal of conflict wildlife and provision of anthropogenic food sources (Schell et al., 2021). We focused on urban residents' willingness to alter their behaviors to mitigate human–wildlife conflicts, using metropolitan Atlanta as a case study.

Interestingly, we found that the most frequently reported interactions with wildlife were positive or neutral. Respondents were most likely to state that they watch wildlife or that they put out food or seed for wildlife to eat. Although people derive subjective well-being (i.e., happiness, life-satisfaction, self-worth, purpose) from positive interactions with urban wildlife (Brock et al., 2017; Mumaw et al., 2017), anthropogenic food conditioning of wildlife (e.g., increased access to trash, pet food, and bird seed) is problematic. Resource provisioning for urban wildlife encourages wildlife to view humans as a food source (Cox & Gaston, 2018; Griffin et al., 2022) and may result in multiple adverse wildlife impacts, including pathogen transmission at feeders, altered predator–prey dynamics, reduced fitness of food-conditioned animals, invasive species outcompeting native species, altered local abundances of non-target species (e.g., insects, squirrels), inter-species aggression, and altered behavior (e.g., increased boldness) and ecology of species (Cox & Gaston, 2018; Schell et al., 2021). It is therefore unsurprising that the two most commonly reported conflicts with wildlife were that wildlife damaged respondents' landscaping and raided their trash—behaviors that are likely to be adopted by wildlife that are conditioned to anthropogenic food sources (Cox & Gaston, 2018; Pienaar et al., 2015; Schell et al., 2021). This suggests that outreach efforts to educate urban residents about living with wildlife should focus on why securing anthropogenic food sources (e.g., keeping pet food indoors, ensuring wildlife cannot access trash) is important and intentionally feeding wildlife is inappropriate. Admittedly, the latter message is challenging to deliver because people often believe that they are conserving wildlife by providing feed (Brock et al., 2017) and are resistant to changing these practices if they habitually feed wildlife (Griffin et al., 2022). Nonetheless, making urban residents aware of the adverse impacts of feeding on wildlife may persuade some individuals to secure food attractants and stop feeding wildlife (Cologna et al., 2022; Truelove & Gillis, 2018).

It is important to note that less than 10% of respondents reported vehicle collisions with wildlife or that wildlife had threatened or attacked their pets, their household members or themselves. This is encouraging because wildlife that threaten human safety are often euthanized (VerCauteren et al., 2018). The fact that most respondents had not experienced severe conflicts with wildlife also likely explains why 34% of respondents had not implemented any conflict mitigation measures and most respondents were unwilling to haze wildlife using water hoses, paintball guns, or motion-activated sprinklers, alter their landscaping, or fence their property to exclude or deter wildlife. Rather, respondents' stated willingness to secure their trash and to keep pets and pet food indoors were appropriate behaviors to prevent

increased human–wildlife conflicts arising from food conditioning of wildlife or inter-species aggression between pets and wildlife (Pienaar et al., 2015; Rodgers & Pienaar, 2017). We note that respondents who had already implemented these measures considered them very successful in mitigating human–wildlife conflicts, which suggests that more widespread adoption of these measures would be effective in mitigating human–wildlife conflicts in metropolitan Atlanta (Cologna et al., 2022; Truelove & Gillis, 2018). In fact, securing pets, pet food, and trash are low-cost, low-effort behaviors that are likely to become habitual if urban residents are persuaded that these behaviors are consistent with pet welfare and urban wildlife conservation (Cologna et al., 2022; Truelove & Gillis, 2018).

However, respondents who had not adopted conflict mitigation measures often stated that mitigation measures were unnecessary. Our findings suggest that outreach about conflict mitigation measures should thus highlight both the necessity of implementing these measures and their effectiveness in preventing human–wildlife conflicts (Cologna et al., 2022; Truelove & Gillis, 2018). Based on our regression analyses, respondents who had implemented mitigation measures selected measures that were appropriate for the conflicts they had experienced with wildlife, which is encouraging. Unfortunately, respondents' stated willingness to adopt new conflict mitigation measures did not necessarily align with the conflicts they have experienced. Although respondents who felt threatened by wildlife were more likely to secure trash and haze wildlife, respondents who reported that wildlife had eaten their pets' food were less likely to keep pet food indoors. This suggests that more effort is needed to persuade urban residents of which actions are appropriate to mitigate conflicts and the success of these actions in reducing conflict (Cologna et al., 2022; Truelove & Gillis, 2018).

Although we asked respondents about their interactions with wildlife, we did not measure their risk sensitivity related to human–wildlife conflicts. However, we found that risk sensitivity to zoonotic pathogen transmission increased both actual and intended adoption of conflict mitigation measures by respondents. This suggests that messaging about conflict mitigation should address potential disease risks associated with human–wildlife interactions (Clarke, 2009). However, caution should be used when communicating disease risks to the public, especially when pathogens may transmit to humans or pets (Hanisch-Kirkbride et al., 2013, 2014). Messages should be carefully crafted to prevent unintended negative consequences such as reduced tolerance for wildlife or increased lethal control of wildlife. Rather, messaging may be more effective if the health effects of food provisioning on valued wildlife species are highlighted (Hanisch-Kirkbride et al., 2014).

Importantly, outreach and messaging should reinforce urban residents' self-efficacy, namely their belief that they have the information, skills, and resources needed to manage human–wildlife conflicts effectively (Bandura, 1977; Klöckner, 2013). Consistent with Cologna et al. (2022), we also found some evidence that trust in the GADNR to manage wildlife increased respondents' willingness to adopt new conflict mitigation measures. Combined, these findings suggest that successful messaging should emphasize the role of individual action in limiting human–wildlife conflicts, while simultaneously building a relationship of trust between agency officials and urban residents (Lischka et al., 2020).

Interestingly, we found that mutualists (who believe in human–wildlife coexistence) were more likely to keep their pets and pet food indoors, but mutualism was not correlated with willingness to haze wildlife. By contrast, respondents with domination value orientations were more likely to haze wildlife. This presents a wildlife management challenge because urban residents in the United States have increasingly trended toward mutualism (Manfredo et al., 2021). Mutualists may perceive hazing as dangerous or harassment of wildlife, and hence unethical. Similarly, older respondents were less likely to engage in hazing. Nonetheless, hazing may be needed to mitigate conflicts with birds, raccoons, opossums, deer, and other urban wildlife (Honda et al., 2018; Ober & Kane, 2012; Perry & Averka, 2020; Ziegenhagen & Tuck, 2005). While urban residents may have a more anthropomorphic view of nature (Manfredo et al., 2020), there is a general lack of understanding of the links between biodiversity conservation and individual actions at the household level, which can be a barrier to promoting pro-environmental behavior change (Selinske et al., 2018), including appropriate hazing of wildlife. Engaging and empowering urban residents through community-science initiatives and hazing-specific education may be needed to improve understanding, attitudes, and public safety associated with hazing, while building trust with wildlife agencies (e.g., Bonnell & Breck, 2017).

Taken as a whole, our results suggest that education and outreach about the need for conflict mitigation measures should highlight the importance and effectiveness of these measures in conserving wildlife, while also securing the well-being of humans and pets. Specific guidance should be provided on appropriate behaviors to mitigate conflicts (Schultz, 2014). Moreover, urban residents may need training or online resources (e.g., videos) on how to haze wildlife, in order to increase their self-efficacy and reduce their moral concerns pertaining to hazing. The GADNR is well positioned to provide

effective outreach and communication about conflict mitigation. In total, 47% of respondents reported searching for information pertaining to wildlife, including through the GADNR website. Among the remaining respondents, 29% indicated that they would like to receive information about wildlife in their neighborhood.

Greater outreach by the GADNR may increase Atlanta residents' trust in the agency to provide assistance on wildlife issues and useful information about preventing human–wildlife conflicts. Most respondents were neutral in their assessment of the agency's outreach and engagement on urban wildlife conflicts, although they agreed that the GADNR has the expertise and resources to manage wildlife (Table S4). The GADNR has developed a platform, the GADNR Urban Wildlife Program (https://georgiawildlife.com/urbanwildlifeprogram), to help metropolitan Atlanta residents prevent or resolve conflicts with wildlife. As part of this program, GADNR engages in outreach and education efforts and situation-specific technical assistance. The GADNR Urban Wildlife website includes information on different strategies to prevent and mitigate interactions with wildlife. However, there may be an opportunity to use other media and strategies such as flyers, workshops, and community-science initiatives to further engage metropolitan Atlanta residents in behaviors that will help conserve urban wildlife by mitigating human–wildlife conflicts. Partnering with trusted community, neighborhood, and environmental organizations could further increase the reach and effectiveness of the Urban Wildlife Program.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Deidentified data that support the findings of this study are available on Zenodo at https://doi.org/10.5281/zenodo.10444964.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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