

## Benefits of Urban wildlife

Humans are an increasingly urban species. By 2050, somewhere between 60-70% of people will live in cities or other analysis suggests we may have already reached that number worldwide. This provides an opportunity, and a responsibility, to examine the ecological role that expanding urban areas play in supporting biodiversity.

### Sanitation services

Despite perceptions of urban areas as devoid of nature, where humans live, so, too, will wildlife. Some creatures lived where our cities were before our arrival, while others have adapted to be *synanthropic*—residing alongside humans more frequently than others. Many of these species are tolerant of human disturbances or may even favor the built environments that dominate cities. Yet, little attention is paid to the services these animals provide to city dwellers. Before viewing the scavenging coyotes (*Canis latrans*) in the abandoned lot or the American Crows (*Corvus brachyrhynchos*) roosting in the park trees as nuisances, consider the value they could be providing the city.

Urban areas carve up space with roads and development. We know that the resulting habitat fragmentation leads to all kinds of issues for birds, reptiles, amphibians, and mammals that are trying to navigate and breed. In some cases, fragmentation is linked to declines in a variety of wildlife. Roads, in particular, kill many organisms each year. But because these roads create roadkill—an ample food source for scavengers—scavenging species seem to adapt to this fragmentation more easily than other species.

### Disease control

These scavengers provide a type of *clean up* service to the city, helping protect our waterways from *roadkill runoff* and the spread of disease. It remains unclear the degree to which roads then become ecological traps for scavenging species who expose themselves to the risk of injury or death by vehicle, but some researchers have noted that urban-dwelling scavenging species learn to successfully navigate roads—one of several skills urban animals exhibit that help them cope with life in the city and demonstrate the *phenotypic plasticity* common among successful urban dwellers.

One study from the UK found that gulls, foxes, magpies, and crows all contributed to cleaner streets by scavenging for roadkill. Birds, active at dawn and through the day, were documented to be quick and efficient scavengers, while foxes and other small mammals were active at night, providing around-the-clock elimination of rotting

roadkill from the roads and thru-ways of the city. This is an incredible sanitation service, as anyone who's encountered decaying roadkill can attest.

## **Consume leftover human food and waste**

Humans produce waste. Scenes like the one depicted above are all too common. Some urban animals are using this litter as a food source. For example, one study in New York City, comparing food litter removal in medians vs. parks, found arthropods, namely ants, were able to remove 4–6.5 kg (8.8-14 lbs) of food per year in one median. In the same study, vertebrates, such as birds and small mammals were also found to be effective at removing food waste, with a greater diversity of them in parks compared to medians. These animals are providing a critical sanitation service in our cities, while we wish it wasn't a necessary act, it does keep streets cleaner.

## **Helps to eliminate weaken n disease animals**

Urban areas are home to many feral or free-roaming cats (*Felis catus*). Outdoor, free-roaming cats injure or kill billions of smaller wildlife a year. When free-roaming cat populations aren't kept in check, the biodiversity of birds and other animals will suffer in the city. Citizen scientists were able to document that, where coyotes (*Canis latrans*) are present, outdoor cats populations were lower. The presence of coyotes likely helps to maintain biodiversity in urban areas by minimizing the population of outdoor cats. Our recommendation for helping keep cats happy, healthy, and protected from predation is to consider building a catio.

## **Helps in controlling rats population to avoid tick-borne diseases in humans**

Research conducted over the last 19 years in the northeast shows lyme-infected ticks were high in areas with abundant food resources for white-footed mice. White-footed mice are very successful living in suburban and urban communities, close to people. This provides some insight on why lyme-infected ticks can be more abundant in urban areas compared to contiguous forest in the same region. Research demonstrates contiguous forests support more mice predators such as foxes (pictured). Next time a fox spooks you going out to empty the garbage, whisper a quiet *thank you* for all the mice they eliminated in your neighborhood.

Another undervalued animal that predated on rodents, even in urban areas, are snakes. The species of snake found in your city will be influenced by the ecoregion, but, in general, garter snakes (like the one pictured above) are a common genus of snakes that reside in urban spaces. There is limited empirical evidence on the role snakes play in

controlling rodent populations in cities. One study in Australia found that, contrary to what the researchers expected to find, urban snakes were not heavier or more well-fed than their rural counterparts. Snakes' roles in urban areas is a field ripe for more investigation.

Animals such as opossums and raccoons, while not direct hunters of mice, are aggressive groomers, killing thousands of attached ticks in a season. Where these animals are present and abundant, tick populations are lower. These mammals can be seen as problematic in urban areas, but their presence is a sign that tick numbers may be down in your community, thus the risk of acquiring tick-borne diseases, may too, be lower.

In addition to decreasing mouse, and thus tick, populations, small mammals like fox, coyotes, bats, and birds, help to control other *pests*. Rats are remarkably adept at living among humans, creating their own collection of problems.

### **Helps Controlling the mosquito populations**

Mosquitos, too, are common in urban areas, but their populations are dramatically reduced by bats and mosquito-eating birds like purple martins, swallows, swifts, and some songbirds. Inviting and supporting rat and mosquito predators into our urban areas not only provides pest management, but also may be beneficial to our health and well-being in cities.

### **Helps in pollination of plants**

Cities can also provide valuable habitat for pollinators, such as the pictured Lurie Garden at Millennium Park in Chicago. Efforts to attract more pollinators into our urban environments are underway around the world as communities invest in rooftop gardens, urban flower patches, community parks, and planters on patios and porches. In return, these pollinators, such as bees and butterflies, provide valuable pollination services. Every piece of habitat matters, no matter how big or small, no matter whether the piece is in the country or the city. If we create it, the wildlife will find it.

### **Asthetic value**

As it turns out, nature provides some rather intangible benefits to urban dwellers. Reflect back on the first time you connected with a *wild animal*. Depending on where you live, this could have been a squirrel scampering up a city park tree, a bird soaring overhead, or a bee nectaring on a flowering plant. As a child, these moments are magical. Countless opportunities to connect to the natural world, and to the benefits provided by these experiences, extends into adulthood.

## Improve the health of city residents

Urban wildlife encounters are generally higher in cities with more green space. Green space is also proving beneficial to the health of city residents. One study in Toronto examined city streets that were lined with trees. The streets that had more trees with larger canopies, had residents that self-reported a greater sense of well-being, fewer cardiovascular problems, and better mental health compared to those that lived on streets with fewer, and/or smaller, trees. Researchers were even able to quantify the number of trees linked to these benefits—noting the cutoff at ten or more trees per city block.

Other studies have found that parks, not just trees, can significantly improve the health of city residents. The more parks within walking distance to respondents' homes improved a sense of well-being. The size of the parks was not significant—quantity and proximity to homes, were. Parks that provided space for recreational activities, also, were found to increase health. Thus, it isn't just about having large expansive, semi-wild, green areas, even open, generic green space may promote better mental and physical wellbeing.

Biodiversity matters, too, though. This recurring theme is popping up in various fields of study from crop-science to studies regarding the impacts of climate change. The more biodiverse an ecosystem, the more resilient it is to change. Thus, the more biodiverse our cities are, the more resilient we may be to disturbances, like floods or increasing heat.

An excellent example of how cities can learn from the importance of biodiversity is the loss of American elm trees (pictured) lining the street of Washington DC. Huge, monumental elms used to be found at various historical sites in the city. They were a part of the Capitol's appeal and aesthetic. This started to change in 1947 when signs of Dutch elm disease, a fungal infection, were reported in DC. One by one, the city lost many of its beloved elms. Thousands of dollars were spent on research, remediation, applications of insecticide (to prevent elm bark beetle infestations which spreads the disease), and eventual removal and replacement of lost trees. If the city had a more diverse urban forest, the impact of losing the elms would not have been as great as some large trees would have survived, retaining the services and appeal old trees bring to urban streets and parks.

Cities are not separate from, but rather integral in, creating and maintaining healthy populations of plants and animals (including humans). Wildlife in our cities can be contentious, but overall, provides incredible benefits. Find the green spaces in your community, map them, observe what lives there, and consider changes or additions you may want to make to that space to invite more wildlife to share your neighborhood.