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By: Greg Hanscom

We humans are choosy about the company we keep, particularly when it comes to animals. Dogs and cats and guppies and gerbils can share our space, but the rest of the Animal Kingdom belongs Out There, in Nature.

Nature, however, has a habit of jumping fences, and when it does, Tom Scollins' phone rings.

Scollins, a compact 34-year-old who wears wraparound sunglasses, khaki fatigues, and black, police-style boots, grew up a stone's throw from the Bronx Zoo. As a youngster, he was known to spend snowy days in the warm reptile house, watching the frogs and salamanders. ("I was kind of a strange kid," he allows.) He went on to become a zookeeper, and worked in the Baltimore Zoo's reptile house for a few years. He now runs TS Wildlife Control, a one-man business based out of his house in Govans.

When starlings nest in the dryer vent, Scollins gets the call. When a squirrel slides down the chimney and ping-pongs around in the basement, he gets the call. When a black rat snake emerges from the shadows in the laundry room, the panicked homeowner calls Scollins—no matter the hour, no matter the weather—and asks him to come put the beast back Outside, where it belongs.

Scollins has plucked a couple of wayward raccoons from the cliff face at the National Aquarium's still-under-construction Australia exhibit. He has descended into the bowels of the downtown post office to flush a Cooper's hawk out of the sorting rooms. He was once summoned to trap a groundhog that was nibbling the flowers outside a "massage parlor" on Eastern Avenue. "This woman comes to the door wearing nothing but a bra and panties," says Scollins. "I'm standing there with my clipboard—'Um, did you call about a groundhog?'"

Wild animals travel through our alleys and storm drains. They feed on our scraps, and nest in the overlooked corners of our attics, yards, and parks. (In May, a mallard hatched eleven ducklings in a sidewalk planter on Pratt Street.) They are here in spite of, and sometimes because of, us, and they stubbornly refuse to go away.

Tom Scollins understands this in-between world of urban wildlife by instinct and experience. But Baltimore has also become a laboratory for a cadre of researchers who are trying to make sense of the "urban ecosystem." These researchers, who hail from universities across the country, operate under the federally funded Baltimore Ecosystem Study. They are breaking scientific ground, and in the process,

shining some light on our often troubled relationship with wildlife. Their research suggests that, while Baltimore's human residents may always rule over its wild ones, this town may well be big enough for the both of us.

Until recently, urban ecology was at best an obscure sub-discipline in a field focused on more pristine places. Mary Cadenasso, an ecologist at the University of California Davis and one of the principal researchers with the Baltimore Ecosystem Study, remembers an ecology conference in the mid-1990s. When a woman asked about her work, Cadenasso mentioned that she was researching forest patches in the Bronx. The response: "Well, that's not ecology."

Cities, it seems, were just too messy for mainstream ecologists. The ideal study site was an island of wildlife habitat unaffected by the world around it. And in fact, islands were the inspiration for a field of ecological thinking, which was crystallized in the 1967 book *The Theory of Island Biogeography* by ecologist Robert MacArthur and biologist Edward O. Wilson. Here's the Cliff's Notes version: Big islands closer to the mainland tend to harbor a greater diversity of wildlife than smaller, more isolated ones. It makes sense: A small isolated island is hard to get to, and even if a small population of birds, say, managed to gain a foothold, inbreeding or the inevitable tsunami or a hurricane would eventually wipe them out.

These principles laid the groundwork for how people thought for decades about protecting wildlife, both on islands and off. To stave off a growing wave of extinctions, conservationists have advocated for creating large wildlife reserves across continents—the equivalent of large islands in the ocean—and then connecting them with corridors to allow animals to migrate and interbreed.

But islands have proven to be imperfect metaphors. "Island biogeography theory is binary," says Cadenasso. "It's islands versus water, good versus bad habitat." Most terrestrial ecosystems resist such simple divisions, she says, because the "sea" surrounding most habitat "islands" is often dotted with shrubs, trees, or other features that can be of use to wildlife.

Cadenasso and others have championed a new way of thinking about terrestrial ecosystems—one that takes into account the complex hodgepodge of habitat and human development that spatters a growing share of the landscape. They call the new approach "patch dynamics," and it's a perfect fit for ecological studies in cities, with their ever-evolving landscapes of houses and parks, development and decay.

Steward Pickett, an ecologist at the Cary Institute of Ecosystem Studies in Millbrook, New York, did the pioneering work in patch dynamics in the 1970s and '80s, working in forests in New Jersey and Pennsylvania. When he moved to New York, he began to look at forests in a more urban context. (He

was Cadenasso's advisor when she was working in the Bronx.) "The more we studied these [urban] forests, the more we thought, we ecologists need to understand people. We need to work with social scientists, historians, and economists," he says.

They found those people in Baltimore.

Sometime in 1993 or '94, Pickett received an e-mail from Morgan Grove, then a doctoral candidate at the Yale School of Forestry and Environmental Studies. Grove had come to Baltimore in 1989 as a master's student, and had helped set up a partnership between Yale, the nonprofit Parks & People Foundation, and what was then called the Baltimore City Department of Parks and Recreation: Called the Urban Resources Initiative, it broke new ground in natural resource management, and put Baltimore residents of all ages to work planting trees and restoring streams. For his dissertation, Grove was studying neighborhoods in the Gwynns Falls watershed, to see if class and race had any bearing on the distribution of vegetation, which slows and filters stormwater runoff. While his research was more sociology than ecology, he asked Pickett if the principles of patch dynamics still applied.

"Steward was really excited. He'd finally met a social scientist who understood ecology," says Grove.

Not long thereafter, Pickett and a handful of his colleagues accepted Grove's invitation to come to Baltimore. In addition to the Urban Resources Initiative, they found an engaged group of local, state, and federal agencies, and a city with a rich history and distinct neighborhoods that lent themselves nicely to the patch dynamics approach. "I just thought, this is the perfect place to build a new kind of ecology," says Pickett.

In 1996, Pickett, Grove, and Parks & People President Jacqueline Carrera went to the federally funded National Science Foundation, which was in the process of setting up a nationwide network of long-term ecological research sites. The following year, the foundation selected Baltimore and Phoenix, Arizona, for six-year research grants (since extended for another six years), giving urban areas a little street cred in nature-lovers' circles, and urban ecology a significant financial boost.

With Pickett as project director, Grove leading the social science, and Parks & People building local partnerships, the Baltimore Ecosystem Study has pulled together researchers from disciplines ranging from soil science to forestry and urban design. Much of the research has focused on broad systems—stormwater runoff, nitrogen cycling, socioeconomic factors shaping the urban ecosystem—but it has also looked at urban wildlife, and the results are intriguing.

I met Chrissa Carlson on the stoop of her Waverly rowhouse on a sunny May morning, her kinky blond hair pulled into pigtails. "I have something to show you," said the animated 29-year-old. She disappeared inside for a moment, and returned with a

small bundle folded into a brown paper bag. She carefully unwrapped a marshmallow-sized lump of black, white, gray, and yellow. "It's a magnolia warbler," she said. "I found it in my backyard yesterday."

We admired the dead bird, which was likely passing through when it died, headed north from its wintering grounds in Central America or the Caribbean. Then she took it back inside and put it in her freezer for safekeeping. (When I inquired about the bird a week later, she told me that it was in a Mason jar, embalmed in diluted vodka: "I want to display him with some of my other curiosity-shop-esque objects, but he is floating at the top of the jar.")

Next, Carlson grabbed her binoculars, jammed a worn copy of the National Geographic *Field Guide to the Birds of North America* into the back of her capris, and started down the sidewalk. As she walked, she pointed out the neighborhood's feathery residents, which she recognized by their songs—the more reliable identification method when working in the woods, where you'd otherwise have to spot a bird the size of a fingerling potato flitting about a tangle of leaves forty feet up. "There's a robin over there, and cardinals," she said. "That's a mockingbird." She pointed toward the source of twittering over our heads: "Those are chimney swifts—the ones that look like cigars with wings."

Carlson was trying to show me that birds, like people, are picky when it comes to real estate. Her block, where there were a few ample yards and a scattering of trees and shrubs, seemed to suit robins, mockingbirds, and the ubiquitous lipstick-red cardinals. Just to the south, on a nearly treeless block of rowhouses, we found only house sparrows and starlings, both European imports that have made themselves all-too-comfortable in American cities.

Then we walked west across Greenmount Avenue and stepped into the shady, tree-lined confines of Guilford. The air lit up with birdsong. "There's a Carolina wren over there," said Carlson, pointing to a hedge across the street. We spent a few minutes ogling a chestnut-sided warbler, then walked on, Carlson pointing out a red-eyed vireo, a bronze-headed cowbird, a song sparrow, and a northern parula. Our final stop was a patch of woods adjacent to Druid Hill Park, where we watched a veritable Mardi Gras parade of birdlife, including an orchard oriole, a cousin of Baltimore's flamboyant avian icon.

This tour of the town's bird neighborhoods served as the background for Carlson's master's research with the Baltimore Ecosystem Study, which she told me about as we walked. In the spring and summer of 2005, Carlson frequented fifteen forest patches among the houses along the tributaries of the Gwynns Falls. Her goal was to learn something about what made the woods in these neighborhoods attractive—or not—to birds looking to hunker down and raise kids.

The work was not always pleasant. She described bushwhacking through "trashy little snags of woods, practically in people's backyards, cursing nature."

The poison ivy didn't bother her too much, she said, "but multiflora rose and other thornies were the bane of my existence"—not to mention Lyme disease, which she fortunately discovered early enough to avoid any lasting health issues.

In the end, though, it all paid off. Carlson summed up her findings thusly: "Birds like trees."

After months of number crunching, a more nuanced picture began to emerge from her data. As island biogeography theory would dictate, the bigger forest patches harbored a richer array of bird species. But when she factored in the landscape within a 100-meter buffer surrounding the woods, she saw that there was more to it.

Using a land-use classification system called HERCULES (short for High Ecological Resolution Classification of Urban Landscape and Environmental Systems) developed by Mary Cadenasso, Carlson broke the buffers into seventy-two different kinds of patches, based on vegetation, buildings, and surface materials. Her results showed that forest patches in neighborhoods with lots of mature trees harbored more species than those in neighborhoods with fewer trees. In fact, contrary to popular ecological thinking, the surrounding neighborhood had a stronger bearing on the birdlife in forest patches than did the structure of the forest itself.

A paper based on the study, co-authored by Carlson, Mary Cadenasso, and Gary Barrett at the University of Georgia, is being considered for publication in the journal *Landscape and Urban Planning*. It was a single, small study, and Carlson cautions that it is difficult to draw any hard conclusions. But if her findings hold up, they have some interesting implications: What we plant in our yards can have a substantial impact on the birdlife in neighboring green spaces. In other words, all the nature-magazine admonishments about decorating your yard with wildlife-friendly native plants may be more than just hype.

Baltimore is peppered with parks—six thousand acres worth. With a little work from the neighbors, those parks might be stretched to accommodate a greater diversity of wild creatures.

All this begs the question: Is it wise to encourage wildlife to live in cities, where encounters with the dominant species often end in disaster? One need look no farther than the sides of our roads to see what happens when wild animals get too close. Exploding deer populations, which cause car crashes and spread Lyme disease, have long bedeviled Maryland suburbanites.

Tom Scollins, the wildlife control expert, says that the root cause of most negative encounters with wildlife is laziness: A contractor doesn't spend the extra few bucks to screen off a bathroom vent, creating an attractive nest hole; a motorist tosses food out the

window, attracting scavengers to the roadside; a restaurant leaves its dumpster open, creating a ready-made feast. With a little more care, he says, we can learn to live together more peaceably. “We’re never going to exclude wildlife from urban areas,” he says. “We just have to learn to coexist.”

Chrissa Carlson and others are quick to point out that cities will never be havens for whole, healthy wild animal communities. Where humans reign, “generalist species” that can make use of a variety of habitat and food often thrive—think raccoons and starlings. But there are plenty of other, more specialized creatures that will never hunker down in a little forest patch in the city. There are songbirds that would fall prey to our fluffy, subsidized predators—and then there are nature’s large predators, like bears and wolves, that need more room than even an animal-friendly city can provide; only large nature reserves will work for them.

But if Baltimore can make itself more wildlife- and ecosystem-friendly, it will provide a valuable lesson for the world, says Steward Pickett. Eighty percent of Americans live in cities, and this year, the world population as a whole will pass the halfway mark: According to the United Nations, for the first time in history, more people will live in cities than out. In China, Latin America, and Africa, cities are rising almost overnight.

“The bad news is that in much of the world, this urbanization is badly planned,” says Pickett. “A lot of the people moving into cities are living in shantytowns and horrible slums. Twenty-first century urbanism is showing some of the horrors of 19th century urbanism.”

Unless we learn to better integrate cities into the natural world, we’re bound to repeat the mistakes of the past—on a much larger scale, says Pickett. We leave cities out of our ecological equations at our own, and the planet’s, peril.

And cities do harbor more than just raccoons, rat snakes, and starlings.

Baltimore, for its part, is a waypoint on the aerial superhighway traveled by millions of migrating birds each spring and fall—birds, like Chrissa Carlson’s magnolia warbler, that winter in the tropics, but breed up north. During migration in Patterson Park, “it can sound like you’re in the middle of Canada someplace,” says ecologist David Curson, director of bird conservation for the National Audubon Society’s Maryland-D.C. office. “The trees come alive with the sounds of rose-breasted grosbeaks, blackpoll warblers, and Swainson’s thrushes.”

There’s another bird that makes a surprising showing here—and not just for a refueling stop. The least tern, a robin-sized seabird with knife blades for wings, flies all the way from the Caribbean to nest around Baltimore. Curson, a soft-spoken 44-year-old who got his start watching birds as a kid in London, is charged with keeping an eye on them.

Curson and I load into his persnickety Toyota Matrix one early June morning and head east from his office across the street from the Patterson Perk coffee shop. Just outside the Beltway, we stop at a low, brick building emblazoned with the words “Patapsco Patriots Achieve With Integrity.” This is Patapsco High School, and the birds we’re looking for immediately show themselves, rising above the rooftop with a din of piercing cries.

Beneath us, the building echoes with the voices of nine hundred high school kids. Around us are rowhouses, and over the rooftops to the south, we can see the former Bethlehem Steel plant and the Sparrows Point Shipyard. But here, on this gritty rooftop island, there is a nesting colony of a rare and sensitive species. We count seventy birds in all, forty-four of them sitting with their breasts pressed down against the gravel, tails cocked up. Curson says these birds are likely incubating tiny, speckled eggs, though I can’t pick them out amid the rocks. I do spot a fuzzy, gray chick, however, that emerges from beneath one of the birds to gobble up a small fish delivered by another parent from a nearby creek.

From time to time, the colony sends up a squadron of birds that circles and dives—an effective defense against crows or hawks. But up here, they don’t have to worry about cats or raccoons—or people, with the exception of an occasional maintenance worker or Curson, who is careful to disturb them as little as possible.

There are those who would use the tern’s feat of adaptive re-use to argue that wild animals are capable of adjusting to a human-dominated world—that they should be left to evolve or die. But the least terns on the Atlantic coast, I discover, are the exception to the rule. The country’s two other least tern populations—one that nests on the California coast, the other along the Mississippi River—sit on the brink of extinction. And there are many other examples of species that are blinking out as we carve across the landscape.

Still, the tern’s story suggests that an urban world does not have to be an ecologically impoverished one. By choice or by accident, we create niches, patches, and opportunities for wild creatures. They’ll be with us as long as we’re around, doing their thing as we do ours—and with a little thought, we can make their lives easier, and our lives richer. Curson and I visit three schools and two warehouses over the course of the day, and each time, we are greeted with skepticism. Told of the birds, one janitor jokes, “Are they good to eat?” A woman working the desk at a warehouse says sure, she’s seen the birds: “They’ve been pooping all over our cars.” Curson politely answers questions, hands out literature, and tells the story of the indomitable bird on the rooftop.

His enthusiasm is infectious. One employee, intrigued by Curson’s tale, asks, “Where are the birds from?”

“Well,” Curson says thoughtfully, “they’re from *here*.”

—Greg Hanscom is Urbanite's senior editor. He has a 10-year-old Chesapeake Bay retriever named Finnegan.

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