

Vol. 14 No. 3

May/June 2020

THE

WILDLIFE

PROFESSIONAL

Wild Cities

URBAN AREAS PRESENT
NEW HORIZONS FOR
WILDLIFE MANAGERS

AMPLifying bat monitoring across the continent

Wildlife trade ignites coronavirus outbreak

Calling wildlife professionals to climate action





This article was originally published in *The Wildlife Professional*, an exclusive benefit for members of The Wildlife Society. Learn about more membership benefits and become a member at wildlife.org/join.

This PDF has been provided to the author for personal and educational use. Additional distribution, republishing in part or whole, posting on a public website not managed by the author or using for commercial purposes is protected under copyright laws and requires additional permission from the publisher and original author(s). ©2020 The Wildlife Society, 425 Barlow Place, Suite 200, Bethesda, MD 20814, USA.



Less Mowing, More Buzzing

‘LAZY LAWN MOWERS’ CREATE A BUZZ FOR BEE CONSERVATION

By Susannah B. Lerman

Credit: Susannah Lerman

For the final question from my PhD defense in 2011, someone asked what additional activities we could do to help native birds in residential landscapes.

“Get rid of your lawns!” I quipped. Everyone nodded in agreement.

I passed my defense, celebrated — then thought, “What next?” The lawn question stuck with me, and I searched for studies that tested how lawns influence wildlife. I didn’t find many, but I came across a study from 2005 that calculated the extent of lawns in the U.S. — 163,000 square kilometers (Milesi et al. 2005) — roughly the size of Maine, Massachusetts, New Hampshire and Vermont combined.

Americans intensively manage these green spaces with fertilizers, irrigation and weekly mowing, rendering lawns insufficient as habitat for virtually any wildlife. Many of my wildlife biologist colleagues have dismissed lawns as habitats because of the management intensity. However, the 163,000 square kilometer figure stuck with me. Only a herculean effort could remove or significantly reduce the amount of lawn in the U.S., I realized. So I

revised my views of lawns. Instead of getting rid of them, how can we make them less bad?

Around the same time, my newsfeed filled with studies about the decline of native bees. Habitat loss resulting from urban development, in combination with a number of other stressors, was driving these declines (Vanbergen et al. 2013). Could a connection exist between lawn management and bees?

Meanwhile, my family moved to a new home. Suddenly, we had responsibility for maintaining the yard. After a long New England winter, my husband fired up the mower, but rather than mow in orderly rows, he left large patches of tall grass untouched, avoiding spontaneous flowers like dandelions (*Taraxacum officinale*) and creeping Charlie (*Glechoma hederacea*). As I looked at what he had done, I noticed movement by my feet. An eastern bumblebee (*Bombus impatiens*) was buzzing around the creeping Charlie, presumably sucking nectar from the purple flowers.

I had an “Aha!” moment. If we mowed our lawns less frequently, I wondered — maybe every two or three weeks rather than every week — would

▲ An early-season bee takes advantage of the nectar resources provided by dandelions.



we have more floral resources and, in turn, more bees? After successfully pitching this hypothesis to the National Science Foundation, I began working with the University of Massachusetts and the U.S. Forest Service to recruit homeowners and their yards for a study.

Backyard science

Much of my research focuses on private yard management for two reasons. First, yards support about half of all urban green space (Loram et al. 2007). Second, most Americans interact with nature in their yards, as well as in neighborhood parks (DeStefano and DeGraaf 2003). Yards present untapped opportunities for the public to contribute to conservation. Public participation in science, and in this case, volunteering yards for scientific study, represents an important component of improving our understanding of their potential as wildlife habitats. However, since most households manage their yards for aesthetics (Larson et al. 2016), I knew I had to provide an incentive.

Because I wanted to control mowing frequency to test whether floral abundance — and hence bee abundance — differed between mowing lawns every week, every two weeks and every three weeks, I offered to mow participants' lawns myself during the two-year study. Sixteen households in Springfield, Massachusetts, the third largest city in the state, volunteered to take part. All of them had 'lawn-dominated' yards, with no flower or vegetable gardens and minimal other plantings. During the study, no fertilizers or other chemicals were allowed.

Prior to each mowing event, my team and I counted the number of flowers in bloom, including the spontaneous lawn flowers and planted ornamental cultivars. We measured grass height, and we collected bees using pan traps and sweep-net surveys. My collaborator Joan Milam, from the University of Massachusetts, served as the lead taxonomist, identifying most of the bees to species.

Joan had years of experience working in wild spaces, but this study introduced her to urban ecology. She was

consistently surprised at the diversity of bees we observed in the Springfield lawns. She identified 111 different species — roughly a quarter of bee species recorded in Massachusetts — including *Lasioglossum illinoense*, a species not observed in Massachusetts since 1920 (Lerman and Milam 2016) but which we found to be highly abundant. The average yard had about 35 species. As a natural historian at heart, these numbers still astonish me. They remind me that diversity can lurk in the most unexpected places.

Puzzling results

As for our hypotheses, we found that mowing every three weeks resulted in as much as 2.5 times more lawn flowers, like dandelions and clover, supporting our hunch that less mowing would mean more flowers. The abundance of bees, however, spiked when mowing every two weeks. That was a partial win for my second hypothesis — that less mowing would also mean more bees. But it was kind of puzzling. Lawns I mowed every three weeks had about the same number of bees as the ones I mowed weekly.

Our statistical modeling approach, led by my collaborator Alix Contosta, from the University of New Hampshire, accounted for a number of other variables inherent in yards that could drive our results

▼ Author Susannah Lerman mows one of the study lawns. Over the course of the two-year study, she and her field crew mowed roughly 475 miles of lawns.



Courtesy Susannah Lerman



Credit: Susannah Lerman

▲ The study focused on lawn-dominated yards like this one. Note the lack of flowers and woody vegetation.

— factors such as yard flowers in planted beds and lawn size. The differences we observed in lawn flower and bee abundance resulted from our manipulation of mowing frequency, not these and other underlying drivers of biodiversity (Lerman et al. 2018).

Soon, I made sense of the mismatch. The lawns mowed every three weeks had the tallest grass. Maybe, since most of the bees documented in our study were tinier than a grain of rice, the tall grass prohibited access to the flowers, rendering the lawns less attractive, flowers or not.

From an application standpoint, convincing households to refrain from mowing for three weeks seemed a harder sell than suggesting a switch to every two weeks, anyway. In an effort to appease neighbors' concerns, I had placed a sign in each participating yard at the start of the project describing the study's goals. On a few occasions, though, when we arrived for the once-every-three-week mowing, we found participants eagerly greeting us, mentioning the distress of their neighbors, some of whom had volunteered to mow the study yards themselves.

Luckily, they managed to stave off those attempts, explaining their unkempt yards were all in the name of science. Households with the two-week treatment, however, did not convey the same angst about neighbor expectations. And fortunately, Springfield did not have strict ordinances or neighborhood association rules regarding grass height. Regardless, mean grass height was 12.5 centimeters for the two-week lawns and 15.1 centimeters for the three-week lawns — still well below the 24 centimeters often defined in city ordinances (e.g. Municipal Code of Chicago: §7-28-120).

Buzz about bees

After a year in peer review, the journal *Biological Conservation* published the bee study in 2018. Leading up to publication, I had given a number of scientific and public presentations about the research. Based on the audience's enthusiastic reactions, I knew it would resonate outside my professional circle.



Credit: Will Heyward

Working with the communication staff at the U.S. Forest Service, the University of Massachusetts and the National Science Foundation, we drafted two press releases. Local, national and international media outlets covered the research. I sat for interviews with National Public Radio's program "Science Friday" and USDA Radio. Social media posts on Twitter and Facebook spread across the globe, exempli-

◀ A sign-up sheet to pledge to mow less appears on the porch of a North Carolina church. Resident Will Heyward downloaded the free lawn signs from the U.S. Forest Service to hand out to fellow parishioners.



fyng the relevance of the study. The NSF press release made the top 10 most popular downloads list from 2018. The editor-in-chief and associate editor of *Biological Conservation* highlighted it in a reflection on research that exemplifies the goals promoted by the journal: to advance science and protect biodiversity (Primack and Devictor 2018).

Beyond the acknowledgement in the media, I started hearing about individuals applying the research in their own yards and communities. My favorite story came from an email I received in the spring of 2019 from Will Heyward, a resident of a small town outside Boone, North Carolina, who saw the research highlighted in *Science Magazine*. It inspired him and his wife, Lori, to post a sign-up sheet on the front porch of their church for their community to learn more about simple steps to save bees and pledge to mow their lawns less frequently.

Since most Americans live in cities and suburbs, a shared stewardship approach to conservation becomes increasingly important in urban — and urbanizing — landscapes. Planting pollinator

gardens in private yards and public parks is one popular approach to creating habitats for bees. But for those of us who lack the time, money or green thumb, we can provide bee habitat, too — by doing less. I call it the “lazy lawn mower” approach to lawn management.

The simple solution of mowing less frequently extends beyond the city limits and backyards to all areas where we manage lawns. Highway departments, city parks and golf course managers have also shown interest in the lazy lawn mower, demonstrating that both public and private partners can contribute to pollinator conservation — without having to work too hard at it. ■



Susannah B. Lerman, PhD, is a research ecologist with the USDA Forest Service Northern Research Station.

U.S. Forest Service is a Premier Partner of The Wildlife Society





WILDLIFE MATERIALS



PROTECT • MONITOR • STUDY



TRX-1000WR
DIGITAL PLL TUNED TRACKING RECEIVER



Distributor
RECONYX
SEE WHAT YOU'VE BEEN MISSING



California Division of Wildlife



University of Minnesota, FWS

RECEIVERS AND TRANSMITTERS FOR WILDLIFE RESEARCH

800-842-4537

1202 Walnut Street • Murphysboro, Illinois USA • www.wildlifematerials.com