

INTEGRATED PEST MANAGEMENT

Insights

June 2024: Volume 21, Issue 1

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Management of Much-Maligned, Often-Misunderstood Bats

By Marcia Anderson, PhD, U.S. EPA

Bats have a reputation for being spooky or even dangerous, but they are some of the most beneficial animals to humankind.

Bats are also some of the most misunderstood and needlessly feared of the world’s creatures. Alas, bats do not encounter people by choice, but only in defense.

Debunking the “Vampire Bat” Stereotype

Very few species of bats are vampire or blood consuming. Of the more than 1,100 species of bats worldwide, only three consume blood, and none live in the United States. Vampire bats live only in tropical climates and typically feed on cattle, poultry, or other livestock.

Most North American bats have small teeth for eating insects and do not gnaw through wood or other building materials.

Vital Ecosystem Services

Northeastern bats are insectivores, and they need to eat and drink every night. They include many species, such as the big brown, little brown, red, hoary, eastern small-footed myotis, and Indiana bats.

All these bats spend their nights eating pests such as mosquitoes, moths, termites, ants, and cockroaches. A single brown bat can eat 3,000 mosquito-sized insects per night.

Agricultural pests consumed by bats include corn earworms, cucumber beetles, leafhoppers, and stink bugs. Their food requirements are well-served by open fields, parks, spaces near waterways, and agricultural areas.

The University of Connecticut offers a guide to New England bat species that’s help-



Bat catching its evening insect meal. Photo: National Park Service.

ful for telling them apart: news.extension.uconn.edu/tag/bats/

Bats are essential to maintaining healthy ecosystems and economies, yet their populations are declining worldwide due to loss of roost trees, disturbance of dens, and outright persecution by people.

Some bats are primary pollinators for fruits and other produce and help to disperse seeds of plants vital for natural restoration of forests. Enjoy your bananas, mangoes and guavas—and thank the bats that help to bring these fruits to your table.

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Got Bats in Your Belfry, Barn, School, or Attic?

During the day, bats prefer to roost in caves, tight crevices such as cracks in rocks, under exfoliating tree bark, and in barns and awnings of buildings. These locations provide protection

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Bats

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from predators and stable temperatures. They also prefer roosting near open bodies of water.

Bats can enter buildings, especially near parks, through openings as small as one-half inch in diameter. Bats may roost in or under attics, soffits, louvers, chimneys, porches, siding, eaves, roof tiles or shingles, and shutters. In stadiums and parking garages, bats sometimes roost in expansion joints between concrete beams.

A solitary bat—often a lost youngster—will occasionally fly into a building through an open door or window. When this happens, the bat’s primary goal is to escape safely back outside.

If bats inhabit your home or an undesirable location, it is important to use proper eviction methods to remove them. *It is illegal for anyone, including animal control officers and exterminators, to kill bats.* Terminal traps and poisonous bait traps should never be used.

If evicting bats from a building, it is important to provide a nearby shelter, such as a bat house, for the bats to inhabit.

All evictions or exclusions should take place prior to mid-April or after mid-September, as the time in between is bat mating season and, in many states, it is illegal to disturb nesting bats.

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Think You Might Have Bats? Don’t Panic.

The solutions to remove bats from your belfry or other locations are simple. Bats are rarely aggressive, even if they’re being chased.

But be warned, they may bite in self-defense if handled. As with any wild animal, bats should never be touched with bare hands.

Fall Can Be a Batty Time for Schools

Autumn is the time when many North American bat species are beginning their trek back to Mexico and Central America. Because schools may be along the migratory path of bats, they can provide temporary waypoints.

For example, a major bat problem was found in one city’s high school. The building was over 100 years old, and every fall for years, over 3,000 bats would spend time in the halls, classrooms, kitchen, and auditorium.

Bats would enter the school at dawn and exit at dusk from several sites scattered across the building. Every year, the custodians would go to work at 5 a.m. with big nets, running through



Sealing bat entry points in a school. Photo: Salt Lake City School District.



Cleaning up bat guano in a home attic requires professionals. Photo: BatGuys.com

the school, scooping up the bats, and releasing them outdoors. They would catch as many as they could before the start of the school day.

The Need for an IPM Approach

Then, the school district began implementing an integrated pest management (IPM) program. Facility managers researched how and why bats were entering the building.

As with many pests in schools, exclusion was part of the IPM process that needed to be implemented. An 80-foot lift was used to access and seal openings where bats were entering, such as areas around external pipes. These openings may be around windows, by soffits, or where wires or pipes enter the building.

For the next three years, there was a significant decrease in bats entering the school. Eventually, only one or two bats would find their way into the building when a window was accidentally left open. The good news for the bats was that the school district had the foresight to place bat houses on the school's roof to give the bats a place to rest, undisturbed, on their long journey south.

As part of the remediation effort, the school district also had to deal with the bat guano (droppings) deposited in the ceiling spaces above the classrooms. There are human health hazards associated with exposure to bat guano, such as histoplasmosis, a serious respiratory disease. Another reason for guano removal



Little brown bat. Photo: Marvin Moriarty, U.S. Fish and Wildlife Service.

is to avoid attracting secondary pests such as cockroaches or flies. A professional hazardous waste company was hired to remove the guano from the school.

After the school district began implementing an IPM program, there was a significant decrease in bats entering the school.

In another part of the country, a Louisiana school found hundreds of bats adjacent to their gymnasium. The bats had found a perfect roost in a void between the gutter and the building that was inaccessible to potential predators. The health department closed the gym because of the risk to students from exposure to bats and their guano.

While guano outside the gym was swept up daily, some still fell inside the gym wall void. School facility staff applied an enzymatic cleaner into the walls to neutralize any pathogens in the guano.

To exclude the bats, the school removed the gutter, installed flashing over the entry space, and put up a new gutter.

Luckily, all the bats successfully relocated. This bat incident cost the school district over \$250,000.



Little brown bats harboring in an old Delaware church. Photo: National Park Service.

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Northeastern IPM Center Announces Recipients of 2024 Partnership Grants

Annual grant program supports IPM research and extension in the Northeast

The Northeastern Integrated Pest Management (IPM) Center has announced the recipients of its 2024 Partnership Grants.

Each year, through a competitive request-for-applications (RFA) process, the Center's IPM Partnership Grants Program distributes funding to projects that further the mission of the Center, address or identify IPM priorities for the Northeast, and benefit the region at large. The total pool of available funding for 2024 projects was \$160,000, generally with a maximum of \$40,000 per award.

Each funded project falls under one of three categories: **applied research, communications, and working groups.**

This Year's Funded Projects by Category

Applied Research

- **An Ecosystem Services Framework to Improve Economic and Environmental Outcomes of Cattle Pest Fly IPM** (*Bryony Sands, PhD | Postdoctoral Research Fellow | University of Vermont*)
- **Distribution and Frequency of Anticoagulant Rodenticide Resistance Among Commensal Rodents in the Northeastern U.S.** (*Changlu Wang, PhD | Extension Specialist in Entomology | Rutgers University*)

Communications

- **Protecting Endangered Species and Pollinators: Communicating Recent Changes in Pesticide Regulation** (*Niranjana Krishnan, PhD | Assistant Professor and Maryland Pesticide Safety Education Program Coordinator | University of Maryland*)

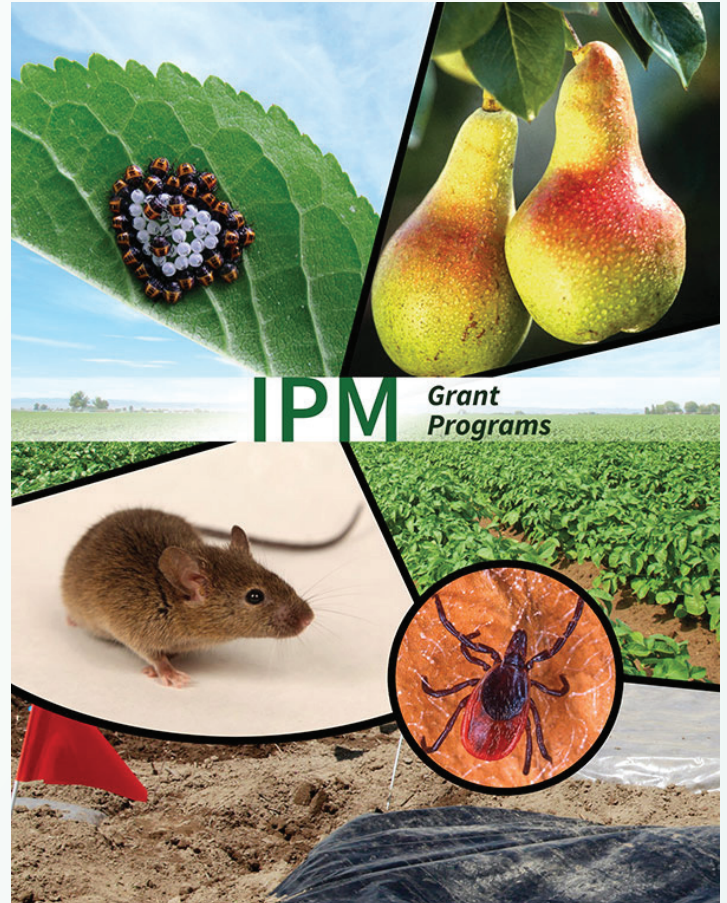
Working Groups

- **Continued Next-Generation Support for the Northeast Tree Fruit IPM Working Group** (*Terence Bradshaw, PhD | Associate Professor and Chair, Department of Plant and Soil Science | University of Vermont*)

About the Projects

An Ecosystem Services Framework to Improve Economic and Environmental Outcomes of Cattle Pest Fly IPM

Flies are the most economically damaging insect pest of grazing cattle in the U.S., and grazing dairy producers constitute the largest agricultural sector in the Northeast. A growing number of dairy farms are organic or grass-fed and pasture their cattle



for the grazing season, bringing new challenges for pest management with more cattle on pasture, limited treatment options for organic producers, and the threat of resistance.

This project will use a multistate survey, on-farm research, and a controlled field trial to gather data for an economic model based on an ecosystem services framework. Knowledge gained will identify widely relevant solutions and promote the development and adoption of pest fly IPM.

Learn more about the project: grants.ipmcenters.org/ipm_project/ne24-021/

Continued Next-Generation Support for the Northeast Tree Fruit IPM Working Group

The New England and Mid-Atlantic states have long been one of the most significant tree fruit production areas in the U.S. A 2010 Northeastern IPM Center Partnership Grant facilitated the establishment of a Northeast Tree Fruit IPM Working Group, which has met annually. But retirements and other shifts in personnel have left next-generation specialists concerned about loss of institutional memory.

This project includes support for continued development of the working group and its annual meeting. Goals include further enhancing regional collaborations, updating IPM prior-

ities and practices lists, transferring and preserving institutional knowledge, and coordinating research and extension projects.

Learn more about the project: grants.ipmcenters.org/ipm_project/ne24-018/

Distribution and Frequency of Anticoagulant Rodenticide Resistance Among Commensal Rodents in the Northeastern U.S.

Commensal rodents are a common group of urban pests. Rodenticides are the primary control method, with the most used active ingredients being anticoagulants. The development of rodenticide resistance by global rodent populations is a concern that has been only sparsely researched, especially in the U.S.

This project will use genetic analysis of collected rodent samples to assess the prevalence of anticoagulant resistance, with a goal of reducing the use of less effective rodenticides and decreasing unintended impacts on predators and scavengers.

Learn more about the project: grants.ipmcenters.org/ipm_project/ne24-019/

Protecting Endangered Species and Pollinators: Communicating Recent Changes in Pesticide Regulation

The EPA is starting to require measures to protect listed species and critical habitat under the Endangered Species Act (ESA), which will significantly alter how non-residential pesticides are applied. Growers and pesticide applicators are largely unaware of these changes due to lack of educational resources and trained extension educators. There is also limited awareness of how to participate in the EPA's decision-making process and the tools needed to be compliant with ESA regulations.

This project will develop and distribute educational materials to increase stakeholder knowledge, regulatory compliance, adoption of IPM and conservation practices, and participation in the EPA's decision-making process.

Learn more about the project: grants.ipmcenters.org/ipm_project/ne24-020/

About the Partnership Grants Program

The Center typically releases its annual Partnership Grants RFA sometime in the fall. Stay tuned for further details.

To receive Center news and announcements by signing up for our low-traffic e-mail list and following us on social media, visit www.northeastipm.org/about-us/contact/.

To learn more about the IPM Partnership Grants Program, visit neipmc.org/go/bfgs.

Bats

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Identifying Bats and Helping Them Find a New Home

If you have bat issues, do some bat detective work prior to acting.

To start, identify the bat species involved—there may be more than one sharing a roost. Some bats are federally protected, so it is important to comply with their protection laws.

Identification can also help if the community or school district is considering building alternative housing for the bats. Bat houses can offer bats enticing dwellings not occupied by humans.



Building a bat house. Photo: University of Connecticut Natural Resource Conservation Academy

For best results, install bat houses a few weeks prior to an exclusion effort to allow the bats time to find their new homes.

Each bat house should be appropriate for the species, large enough to hold several bats, and placed away from buildings when possible.

Note that not all commercially available bat houses are suitable for North American species, so be diligent when shopping.

Some high school shops and university conservation groups have incorporated bat house construction into their curriculum.

For best results, install your bat houses a few weeks prior to an exclusion effort to allow the bats time to find their new homes.

Resources

For more information on bat exclusion and bat house construction, visit Bat Conservation International (www.batcon.org) and Free Woodworking Plans (free.woodworking-plans.org/bat-house-plans.html).



Call for Submissions and Photos

Do you have IPM-related news or an IPM story to tell? We value the perspectives of growers, implementers, policymakers, and others on the front lines of pest management, and we welcome guest submissions for future newsletter editions.

Whether you'd like to write something new for us or submit something you've already had published elsewhere—given reprint permission from that publication—we want to hear from you!

Do you have high-quality photos of pests, pest damage, pest-management methods, or people demonstrating IPM practices? Your images could help us tell the story—and promote awareness—of current and emerging pest- and pest-management issues.

If we use your photos, they could appear in any of our channels or collateral, including newsletters, brochures, websites, and social media, and you'll be credited as the photographer.

Please visit neipmc.org/go/ndfs for more information.

Northeastern IPM Center Announces 2024 IPM Award Winners

The Northeastern Integrated Pest Management (IPM) Center has announced the winners of its 2024 *Outstanding Achievements in Integrated Pest Management Award*:

- **Dion Lerman**, Environmental Health Programs Specialist, Pennsylvania State IPM Program, Penn State Extension
- **Brian Nault**, Professor and Program Leader, Department of Entomology at Cornell AgriTech, Cornell University
- **Victoria Wallace**, State Extension Educator of Sustainable Landscapes and IPM Team Leader, University of Connecticut

The annual award, launched in 2019, honors those whose work on IPM in the Northeast deserve special recognition. Professionals (or organizations) and students are eligible. Nominations come from colleagues, advisors, supervisors, and others familiar with the nominees' work. External reviewers with expertise in IPM evaluate the nominees.

Each winner receives \$500 and agrees to provide a story and/or host a webinar for the Center.

For more information about the criteria and nomination process, see last year's call for nominations at neipmc.org/go/FdNt.

Look for the Center to release the next call for nominations later this year. Sign up to receive our newsletters or follow us on social media by visiting www.northeastipm.org/about-us/contact/.



Dion Lerman.



Brian Nault.



Victoria Wallace.

Reminder: Regional IPM Centers DEIA Funding Available

In late 2023, the regional IPM centers released several diversity-focused funding opportunities. The goal was to make diversity, equity, inclusion, and accessibility (DEIA) both essential and commonplace within the IPM community.

This opportunity has been collaboratively promoted by all four centers to be available on a national level, not limited to any single region.

As of this spring, several projects have received funding, but additional funding is still available under two categories.

For both program, the application deadline is Friday, June 21, 2024.

Equity and Accessibility Grants

The **Equity and Accessibility Grants program** aims to support projects and initiatives that promote DEIA within IPM and the communities we serve. These grants will provide funding to individuals or teams for innovative DEIA-focused projects.

- **Funding Available:** \$100,000 with awards of up to \$20,000 each. The centers anticipate awarding one to two grants in the northeastern, western, and southern regions (funds have already been awarded in the north central region).
- **Period of Performance:** End date no later than 9/17/25.

Equity and Accessibility Mini-Grants

The **Equity and Accessibility Mini-Grants program** is a smaller-scale funding opportunity for individuals or groups who have innovative DEIA ideas but require a smaller budget to execute their projects. These mini-grants are intended to support grassroots DEIA efforts.

- **Funding Available:** \$25,000 with awards of up to \$5,000 each. The centers anticipate awarding one to two mini-grants in each region.
- **Period of Performance:** 12 months from start date, with end date no later than 9/17/25.

Deadlines and Additional Information

An informational webinar was held in November 2023. The recording is available at youtu.be/sdVAKzO2YJs.

If you have any questions or would like to discuss your ideas prior to applying, please contact North Central IPM Center DEIA director Katie Hartmann at kh4@iastate.edu.

For more information—including descriptions of projects that have already been funded under these programs—visit www.ipmcenters.org/research/funding/deia/.

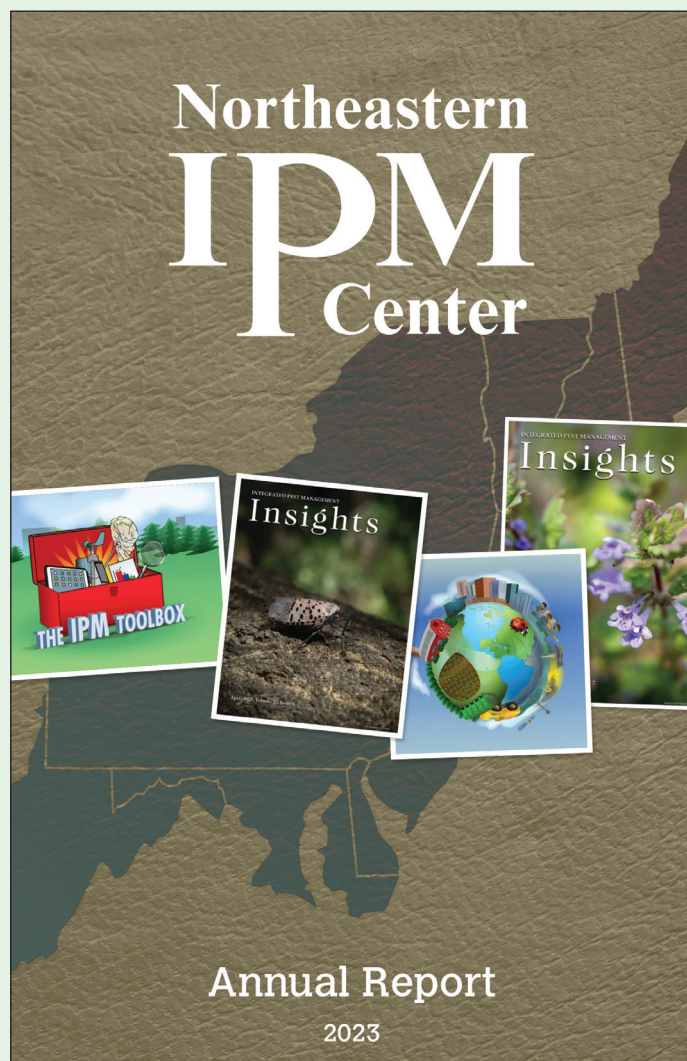
Northeastern IPM Center Releases 2023 Annual Report

The Northeastern Integrated Pest Management (IPM) Center has published our annual report for 2023.

The report compiles, summarizes, and discusses many of the Center's key activities, programs, and initiatives from throughout the year.

It illustrates how the Center fosters IPM research, adoption, and implementation in the Northeast and beyond through grants and awards, webinars and conferences, publications and other communications platforms, evaluation, and the Center's StopPests in Housing Program.

To view the report, along with previous annual reports, visit www.northeastipm.org/about-us/publications/annual-reports/.



Save the Date: 11th International IPM Symposium

Save the date for the *11th International IPM Symposium: Pest Management in Changing Environments*, to be held March 3–6, 2025, at Paradise Point in San Diego, California.

The symposium has traditionally been the premier global event for presenting and learning about the latest research and strategies for effectively managing pests. Participants have typically included academics (including research, extension, and teaching), private and government scientists, industry professionals, policymakers, and students, among others.

There are multiple tiers of early-registration savings available, along with webinars leading up to the event.

The symposium will feature a broad range of sessions, exhibits, field trips, and award presentations. The vision for the 11th International IPM Symposium is to bring together top IPM professionals from industry and academia in agriculture, public health, built environments, landscape, and forest/conservation.

For more information, visit ipmsymposium.org/2025/.



Credits

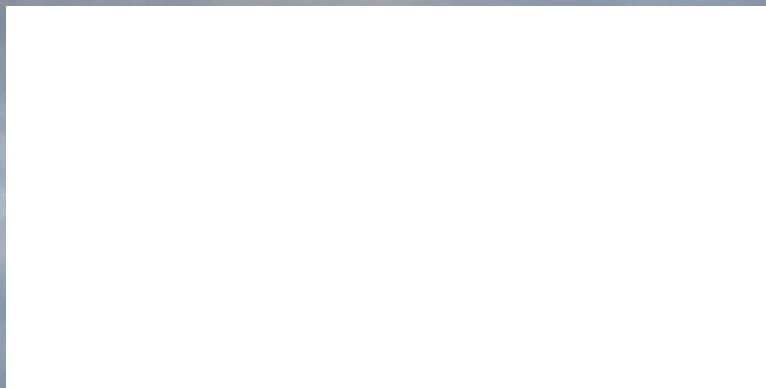
IPM Insights: Deborah G. Grantham, Director; Mike Webb, Editor; Kevin Judd, Designer. **Northeastern IPM Center:** Deborah G. Grantham, Jerrie Haines, Jana Hexter, Kevin Judd, David Lane, Susannah Krysko, Mike Webb.



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Bat houses can offer bats enticing dwellings not occupied by humans.

Photo: Yaquina, flic.kr/p/DPcNr, CC BY 2.0