

Homeowner's Guide to Managing Disease Vectoring Arthropods While Safeguarding Pollinators

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Protecting ourselves, family, pets and environment means managing harmful arthropod pests that may vector disease without endangering pollinators. Though it may seem challenging, a balanced disease vector management approach can achieve both goals.

What are disease vectors?

Disease vectors are organisms that transfer pathogens between humans, animals and the environment. In Louisiana and the southeastern U.S., common vectors include mosquitoes, biting flies, fleas and ticks, in addition to other less encountered arthropods. Although the U.S. has fewer vector-borne diseases than some parts of the world, domestic cases have tripled over the last 20 years.

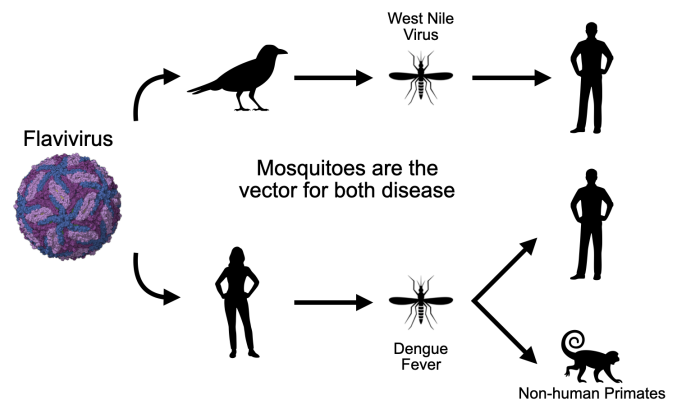


Diagram of how pathogens can spread by disease vectors.

ORGANISM/ TAXONOMIC FAMILY

DISEASE VECTORED

Mosquitoes (Culicidae)	Chikungunya, dengue, dog heartworm, encephalitis (Eastern equine, La Crosse, St. Louis, West Nile virus), malaria, Zika
Fleas (Siphonaptera)	Plague, murine typhus, cat-scratch disease
Ticks (Ixodida)	Anaplasmosis, babesiosis, Bourbon virus, ehrlichiosis, Heartland virus, Lyme disease, rickettsioses, Rocky Mountain spotted fever, tularemia

What are some common pollinators and why are they important?

Pollinators, like bees, beetles, butterflies, moths, birds and bats, help plants reproduce by transferring pollen. They support about 75% of flowering plants and over 35% of global food crops. While commercial beekeeping has grown, native pollinator populations are declining due to habitat loss, pesticide misuse and disease. In the U.S., native bee and butterfly populations have dropped by 60% over the last 15 years. To better protect pollinators, homeowners should become more familiar with the different organisms that contribute to local pollination.

Bees and Wasps

Bees are robust and hairy; wasps are slender and less hairy. Both have two pairs of wings and may be yellow, black, red or brown. While some pollinators are non-native, like the European honeybee, they still aid pollination.



Adult southern paper wasp (*Polistes bellicosus*) (Chuck Sexton via iNaturalist, Creative Commons BY-NC 4.0).



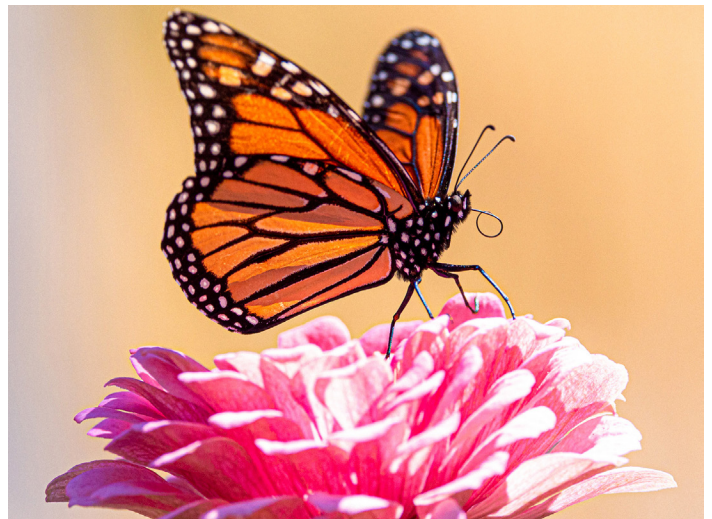
Adult common eastern bumble bee (*Bombus impatiens*) (Jay Heiser via iNaturalist, Creative Commons BY-NC 4.0).

Butterflies and Moths

Butterflies have clubbed antennae and rest with wings upright, while moths usually have feathery antennae and rest with wings flat. Most species pollinate, though some moth larvae or caterpillars are garden pests.



Adult cinnabar moth (*Tyria jacobaeae*) (Jacob Littlejohn via iNaturalist, Creative Commons BY-NC 4.0).



Adult monarch butterfly (*Danaus plexippus*) (Terence Gui via iNaturalist, Creative Commons BY-NC 4.0).

Flies

Possessing a single pair of wings and large eyes, certain fly families (e.g., Syrphidae, Bombyliidae) are pollinators and often mimic bees or wasps.



Adult American hoverfly (*Eupeodes americanus*, Syrphidae) (Scott King via iNaturalist, Creative Commons BY-NC 4.0).



Adult greater bee fly (*Bombylius major*, Bombyliidae) (Nadja Baumgartner via iNaturalist, Creative Commons BY-NC 4.0).

Beetles

Some of the first organisms to pollinate flowers are beetles such as the soldier, long horned and checkered beetles. They can help plants but can also become pests depending on the species.



Adult rotund-collared soldier beetle (*Pacifanthia rotundicollis*) (Brevan Wagner via iNaturalist, Creative Commons BY-NC 4.0).



Adult bee-eating beetle (*Trichodes apiaris*) (Kim Falck via iNaturalist, Creative Commons BY-NC 4.0).

Birds

Birds like orioles and hummingbirds are key pollinators, especially in flowering landscapes.



Adult bullock's oriole (*Icterus bullockii*) (Brian Stahls via iNaturalist, Creative Commons BY-NC 4.0).

Bats

Some migratory bats, like the lesser long-nosed and Mexican long-tongued bat, visit the southern U.S. in spring to pollinate nocturnal flowers.



Adult lesser long-nosed bat (*Leptonycteris yerbabuenae*) (Marco Polo Amarillas Vargas via iNaturalist, Creative Commons BY-NC 4.0).

Identifying and managing disease vectoring pests around the home while protecting pollinators

Mosquitoes

Identification: Adult mosquitoes have a long, piercing proboscis, scaly wing veins and a humped thorax.



Adult Asian tiger mosquito (*Aedes albopictus*) (Thomas Shahan, via iNaturalist, Creative Commons BY-NC 4.0).

Larval mosquitoes are small, have a wormlike body, a large head and thorax. They wiggle when disturbed, thus are called “wigglers” and are often found at the surface of standing water.

Signs of an infestation: Look for larvae in standing water (even small amounts), increased mosquito activity at dusk, and if you are being frequently bitten by mosquitoes when outdoors.

Management:

- Eliminate standing water in containers such as pools, tire ruts, holes in the ground or trees, buckets and old tires.
- Use aerators or larvicides for larger water bodies (follow label directions).
- In severe cases, consider contacting a professional for treatment of the area with adulticides.
- Use repellents (e.g., DEET) and wear long sleeves/pants for personal protection.
- Contact your local mosquito control district or LSU AgCenter for guidance.



Larval Asian tiger mosquito (*Aedes albopictus*) (Jurisdicción Huejutla, via iNaturalist, Creative Commons BY-NC 4.0).

Fleas

Identification: Adult fleas are tiny, reddish-brown, wingless insects with laterally flattened bodies and strong hind legs for jumping. Larvae are small, white and worm-like, often hidden in carpets, pet bedding or debris. Pupae can stay dormant for months, making infestations persistent.

Signs of an infestation: Pets may scratch, chew, lose fur or have red, irritated skin. Fleas can also be introduced by wildlife or rodents. Fleas can bite humans, on their ankles, feet, wasteline, calves, and areas where skin folds.

Management:

- Outdoors: Keep grass short, remove organic debris and avoid overwatering shaded areas. Feral animals or wildlife infestations can result in fleas in the area.
- Pets: Use flea prevention medications, bathe regularly and check often.
- Indoors: Vacuum carpets, furniture and pet areas frequently.
- Severe infestations may require professional pest control.



Adult cat flea (*Ctenocephalides felis*) (Julia Kasper, via iNaturalist, Creative Commons BY 4.0).

Ticks

Identification: Adult ticks have eight legs and a pear-shaped body that becomes swollen after feeding on blood. During their larval stage, ticks will only possess six legs.



An engorged adult brown dog tick, *Rhipicephalus sanguineus* (Isis Meri Medri, via iNaturalist, Creative Commons BY 4.0).



A nonengorged adult brown dog tick, *Rhipicephalus sanguineus* (Martin Galli via iNaturalist, Creative Commons BY 4.0).

Signs of an infestation: Persistent ticks on pets or people, especially after outdoor activity, can signal an issue. Some species, like the brown dog tick, may infest homes even without outdoor exposure.

Management:

- Protect yourself by wearing long clothing, using repellents and checking for ticks after outdoor activity.
- Keep active areas of lawns trimmed and free of leaf litter. Maintain a buffer between yards and wooded areas.
- Use pesticides for severe infestations and limit wildlife access to reduce tick presence.

Protecting Pollinators

The best way to protect pollinator populations while minimizing disease vectors is avoiding use of broad-spectrum pesticides in favor of target-specific ones and habitat modification/source reduction, as to minimize the chance of population establishing nearby the home. The wide range of vectors like mosquitoes makes complete eradication impossible, but targeted control helps keep their populations low and reduces the chances of disease transmission. Engaging in these activities will help maintain an ecological balance with pollinators, their habitat, and can easily result in a reduction of pests without significant harm to beneficial insects and animals. Irresponsible pesticide use, including excessive application, failure to follow label instructions, use of broad-spectrum chemicals, spraying on flowering plants or in pollinator habitats, as well as spraying at inappropriate times (such as when pollinators are most active) can impact the life cycle of local pollinators, harming their reproductive abilities and overall survival. Therefore, pesticides should be used as a last resort and must be applied in a manner that follows the label and considers the entire ecosystem.

Homeowners should try to diagnose issues, identify insects before pesticide application, and if possible, use only target-specific pesticides in accordance to label directions. If assistance with pest management or identification is needed, reach out to your local parish extension agent or the LSU Department of Entomology. Treatments should only be applied during times when pollinators are least active (e.g., early morning/evening or nighttime), with a focus to avoid direct application to blooming or other pollinator-specific plants. Common mosquito adulticide treatments use foggers with permethrin, a pyrethroid. Label instructions typically involve applying the fog treatment directly to mosquito prone areas or by creating a repellent zone through spraying surfaces and vegetation where mosquitoes may gather. A precaution is made to avoid pollinators and pollinator habitats. Similarly, pyrethroids are also used in granular insecticides for tick control. These products are intended for uniform application with proper equipment to lawns, perimeter zones around households and other structures, as well as soil, garden or pavement boundary areas. While instructions to avoid unnecessary environmental contamination are included, pollinator specific information may be missing. Applying treatments during low pollinator activity periods and avoiding pollinator habitat can help mitigate negative environmental impacts.

Resources

The LSU Department of Entomology also offers identification services, either by mail or either by mail or online at <http://lsu.edu/departments/entomology/id.html> For general questions and information about pollinators and disease vectors, reach out to the LSU Department of Entomology or your local mosquito control district. Online resources such as bugguide.net and iNaturalist.org are helpful tools for identifying insects.

DEPARTMENT

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ID Services: www.lsu.edu/departments/entomology/id.html

East Baton Rouge Parish Mosquito Abatement and Rodent Control

Phone: 225-356-3297
Email: marc@brgov.com
Address: 10550 Veterans Memorial Blvd., Baton Rouge, LA 70807

New Orleans Mosquito, Termite and Rodent Control Board

Phone: 504-658-2400
Email: mosquitocontrol@nola.gov
Address: 2100 Leon C. Simon Drive, New Orleans, LA 70122

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