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BATS:

A SUSTAINABLE SOLUTION FOR REDUCING INSECTICIDE USE



CHALLENGE

INCREASED INSECTICIDE USE

Farmers use insecticide to reduce crop losses from insects.

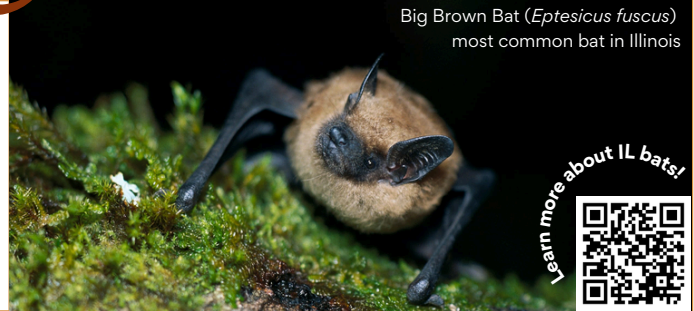
DECLINING BAT POPULATIONS

Bat populations are declining due to insecticide use and white-nose syndrome.

INSECTICIDES HURT MORE THAN BUGS

The consequences of insecticide use in agriculture negatively affect human health, animal health, biodiversity, and our environment. When bat populations decline in an area, farmers increase insecticide use by **31.1%** to prevent crop loss from pests such as moths, beetles, and worms.¹

Big Brown Bat (*Eptesicus fuscus*)
most common bat in Illinois



WHITE-NOSE SYNDROME

White-nose syndrome is an incurable fungal disease that spreads through bat populations during close contact. Providing bats with ideal habitats helps lessen the severity of this disease.^{2, 3}

ILLINOIS

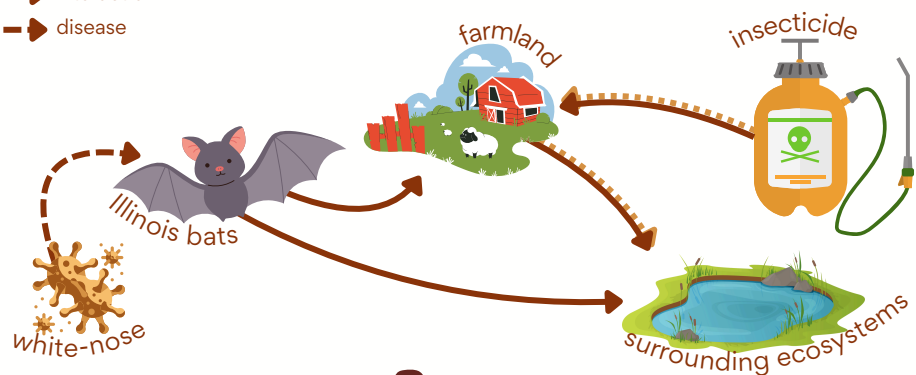
Illinois has 13 species of bats, 4 of which are endangered. A focus on reducing pesticide use could help increase endangered bat populations and reduce harmful impacts to the environment.³

Farmer spraying insecticides on crops



IMPORTANT INTERACTIONS

- insecticide pathway
- interaction
- - - - disease



BATS NEED FARMS...

All Illinois bat species are insectivores, and farmland provides a great environment due to its open space and ample insect activity.³



...FARMERS NEED BATS

Farmers can use bats to reduce the amount of pests that destroy their crops. This saves them money on insecticide and on damaged crops.^{4, 3}

“BATS REMIND US THAT EVEN THE SMALLEST CREATURES CAN HAVE A MIGHTY IMPACT”

- EMILY WILSON

SOLUTION



BATS AS EMPLOYEES:

FARMERS GIVE BATS A JOB AND PROVIDE THEM SAFE AND HEALTHY LAND TO LIVE ON

Northern long-eared bat (*Myotis septentrionalis*)
State (IL) & federally endangered



CLEAN WATER

Water near known bat habitats can be **protected from pollution** and tested to ensure it is safe for bats to consume.

HABITAT PRESERVATION

Forested areas and bodies of water near farmland can be **protected from pollution and destruction**.

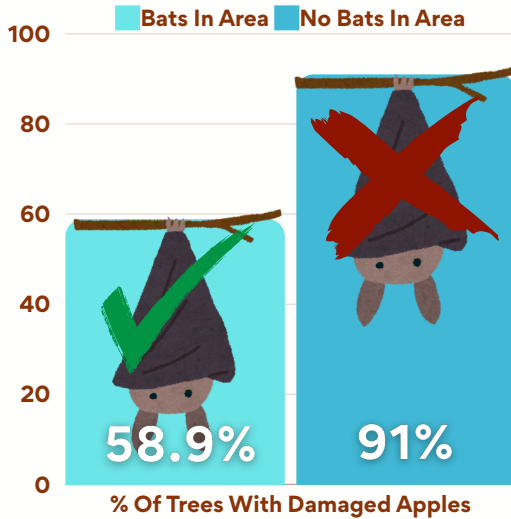
CHEMICAL-FREE & SUSTAINABLE FARMING

Farmers can implement **chemical-free & sustainable farming** practices like cover crops and windbreaks to eliminate chemical pollution while also providing safe habitats for bats.

NATIVE BIODIVERSITY

Focus on planting and supporting **native plants, trees, and animals** in the area can ensure that bats have an **appropriate habitat** for eating, drinking, mating and sleeping.

HOW EFFECTIVE ARE BATS AT PEST CONTROL?



APPLE ORCHARDS IN ITALY⁵

A study conducted in Italy proved our hypothesis to be true: Agricultural areas with bats had less damaged crops than without bats.

They used special netting to prevent bats from entering a designated area of the orchard and left the other half of the orchard open to allow for bats to hunt.

The results were that only **58.9%** of trees had damaged apples in areas bats were allowed to go and **91%** of trees had damaged crops in the netted areas where bats could not access.

BENEFITS OF MORE BATS/LESS INSECTICIDE

Cleaner water



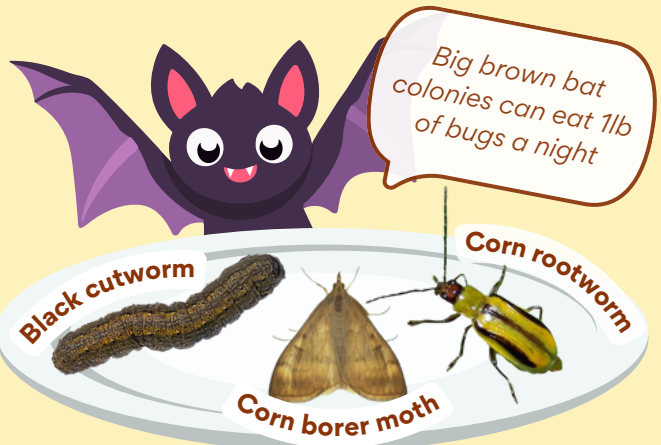
Healthier food



Protects native biodiversity



KEY INSECT PESTS OF ILLINOIS CORNFIELDS⁶





IMPLEMENTATION

CHEMICAL-FREE & SUSTAINABLE FARMING

- **Eliminate insecticide use** on farmland⁷
- Implement **cover crops** on farmland to reduce insecticide use by supporting natural enemies to pests.⁸
- **Educate** about USDA Farm Bill programs such as the Environmental Quality Incentives Program and assist with the application processes.^{9, 10}
- Plant and maintain **native trees as windbreaks** on perimeters of farms to provide habitat for bats and benefits to the farm.



Windbreaks on farmland

HABITAT PRESERVATION

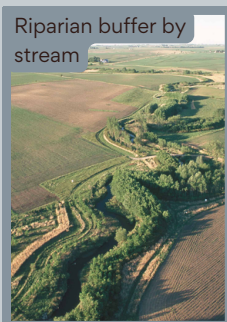
- Landowners can **conserve wooded areas** via a land trust and conservation easement.
- Petition local government to create **protections around public land** that serves as bat habitats.
- **Preserve areas of native vegetation** on/around farmland.⁷
- Leave dead trees to **provide roosting habitat**.⁷
- **Reduce litter** and human impacts in areas of wildlife.



Hoary bat on tree

CLEAN WATER

- Regularly **test bodies of water for contaminants**¹¹
- **Properly dispose of waste**, chemicals, and medications.¹¹
- **Eliminate pesticide use** (household & commercial)
- Use **riparian buffers** near water to filter contaminants & provide habitat for bats



Riparian buffer by stream

NATIVE BIODIVERSITY

- Plant & maintain native species to bring **wildlife and diversity** to the area.⁷
- **Remove invasive plants** that can displace or harm native plants⁷



Removing invasive honeysuckle

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