ROADKILL!

GOAL

To grow awareness of the impact of our roads on wildlife, and develop action plans to reduce roadkill.

Understandings

- Roadkill is any wildlife killed by colliding with a motor vehicle.
- Roads fragment wildlife habitat and impact critical wildlife behaviors.
- Roadkill is preventable.

Knowledge (K) and Skills (S)

K: Roads impact all kinds of wildlife -- from large to very small.
K: Roadkill is related to human-caused habitat fragmentation.
S: Identify patterns in roadkill occurrence.
S: Identify human behaviors that lead to unnecessary roadkill.
S: Describe ways to reduce the impact of roads on wildlife.
S: Describe how you can respond to a roadkill event.

Evidence of Understanding

- Develop an action plan to reduce roadkill near your home in the next two weeks.
- Develop an action plan to reduce roadkill near your home in one year.

Activity Progression -- *1 - 2 hrs*

- Background Exploration
- Backyard Adventure
- Stewardship in Action
- Reflection and Discussion

1) **<u>Background Exploration</u>** -- *20 minutes*

We all use roads to get from place to place. Roads connect our homes with the places we work, learn, shop and have fun. In WV alone, there are 36,000 miles of state roads!

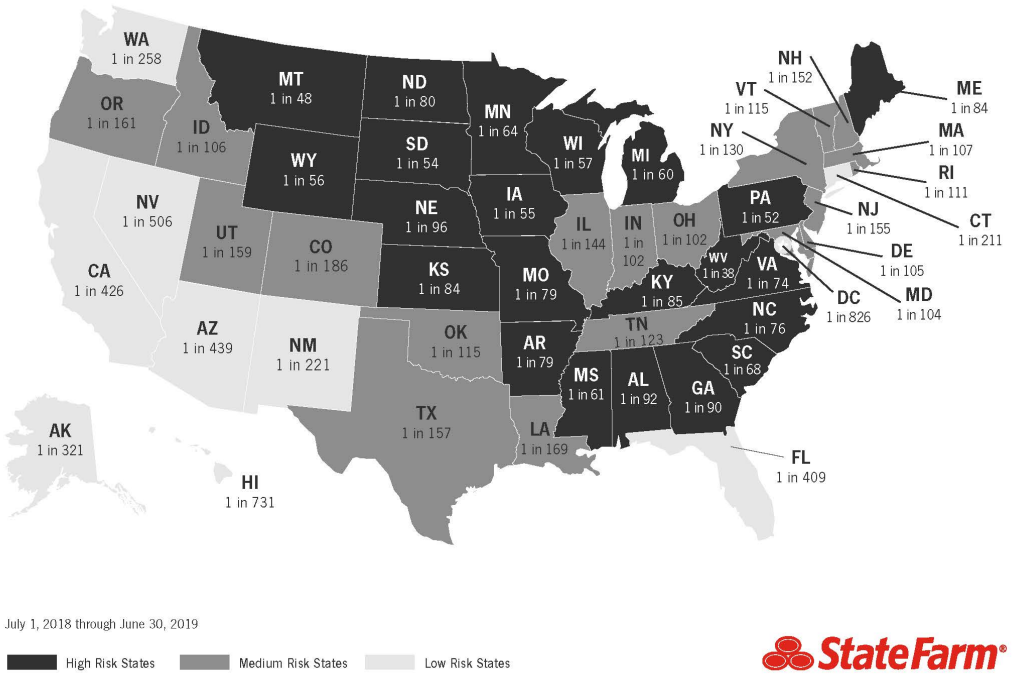
Most of us use some kind of motor vehicle when we travel (bus, car, truck). As motor vehicles have become much more common and advanced in the past century, and wildlife habitat has become increasingly fragmented through human activities, collisions with animals have become a major threat to their survival.

Roadkill is any kind of wildlife killed by colliding with a vehicle. This includes small animals -- like birds, turtles, salamanders, and even insects -- as well as large ones -- like deer, elk and bear.

Here are some statistics:

- There are about 550,000 deer in West Virginia (estimate).
- There are about 570,000 registered vehicles in West Virginia. That's about 1 vehicle per deer.
- WV has the highest risk of a vehicle colliding with a deer in the entire United States. The risk is 1 in 39 drivers hitting a deer while driving, <u>every year.</u>

2018-19 Animal Collision Likelihood by State



Calculate the odds: If all of you here were drivers, how many of you would hit a deer before you graduate?

Unfortunately, the outcome of a vehicle collision is much better for us humans than it is for wildlife. For example, the vast majority of the 14,000 deer that get hit by a vehicle in West Virginia each year will die from it. Some people estimate 1 million large animals get killed on U.S. roads every day. (Estimate of human casualties is 102 per day.)

What other roadkill have you seen along the roadside?

How does it make you feel?

Let's explore why roadkill happens.

Wildlife may not depend on roads the way we do, but roads impact animal behavior in important ways that can put them at risk.

Roads fragment wildlife habitat, forcing wildlife to cross.

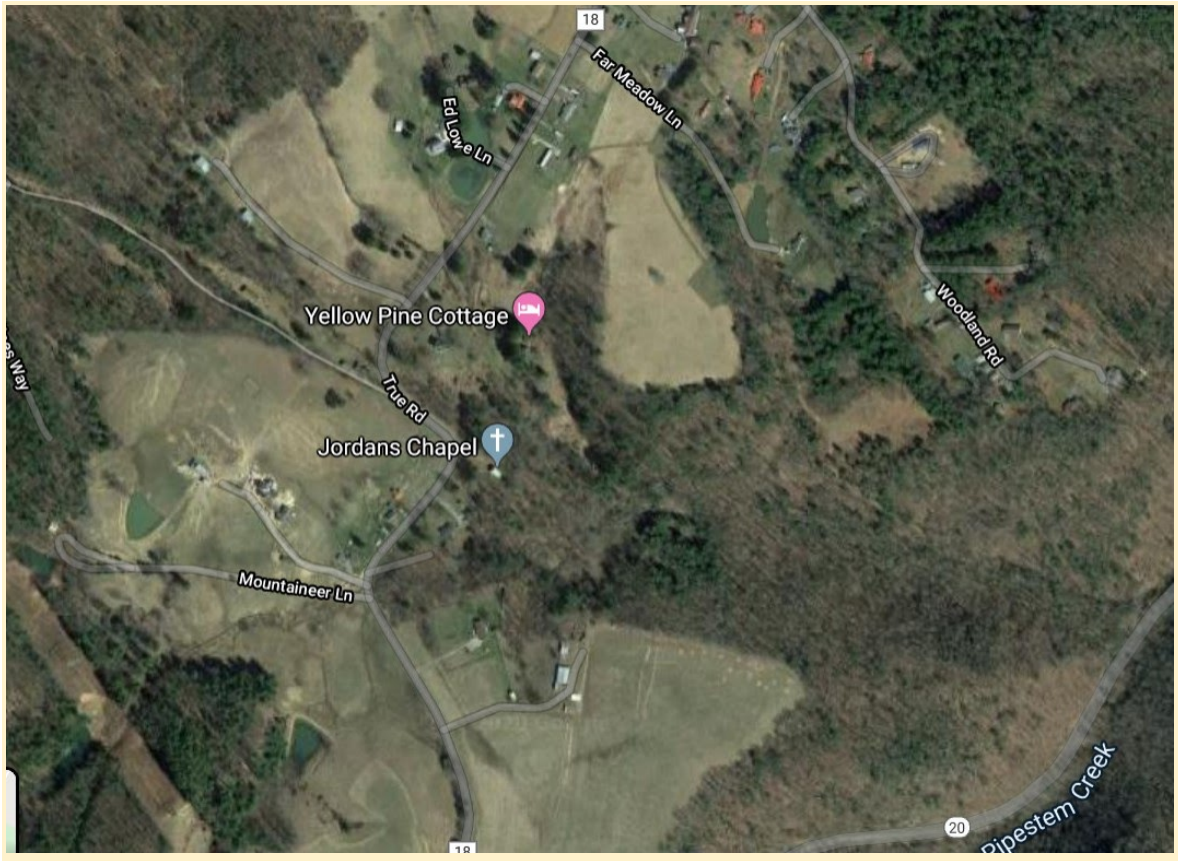
Habitat is what animals require in their environment to survive -- food, water and shelter. Many animals need to cross roads to find food, water and shelter they need, sometimes multiple times a day. Depending on the animal, it can have its own version of "rush hour." For example, many mammals -- such as possums, raccoons and deer -- are most active around dawn and dusk, when driver visibility is much more limited.

There can also be times of year when certain animals are much more active near roads. Bears are very active in the spring, when they are looking for food after winter passes, often along roadsides. Deer are often more active in the late summer and fall, when bucks are "in rut" (looking for a mate).

Depending on how much human infrastructure (homes, shopping centers, workplaces) are built along these roads, wildlife habitat can become very fragmented. This can make it even harder for wildlife to avoid crossing roads to escape from predators or to meet their needs.

Which of these areas around Pipestem State Park has the most fragmented habitat? Which has the least? How can you tell?


Bluestone National Scenic River
Bluestone National Scenic River
Bluestone National Scenic River


18
Far Meadow Ln
Ed Lowe Ln
Yellow Pine Cottage
Woodland Rd
True Rd
Jordans Chapel
Mountaineer Ln
20
Pipestem Creek

Some wildlife must **migrate** to meet their needs in different places at different times of year. For example, Monarch butterflies migrate north through West Virginia in the spring, and south in the fall. Many songbirds and raptors also migrate through West Virginia, crossing and stopping along roads along the way. See TRAC bird rehabilitation report.

It doesn't matter that an animal is naturally slow-moving (turtle) or fast-moving (deer) -- roads are dangerous to wildlife. They deserve our attention and respect.

Roads can also attract wildlife, putting them at risk.

Roadkill attracts scavengers. Raptors, vultures, possums, foxes and even domesticated animals are attracted to dead wildlife on roadsides. These animals can learn to prefer foraging along roadsides instead of their native habitat, putting them at even greater risk of becoming roadkill themselves.

Road salt attracts wildlife. Think of a salt lick on a farm. Road salt used to treat road surfaces in the winter for driver safety can attract animals. This can put animals at risk of being hit by a vehicle.

Residual heat from roads attracts wildlife. Road surfaces, particularly asphalt, absorb a lot of heat during the day, making it warmer than the ground beside it. Animals are attracted to this warm surface to regulate their body temperature, particularly in the evening as the air temperature cools down. This natural behavior puts animals at risk of a vehicle collision.

Unfortunately, roadkill is very common. Some people think it is so common that we have lost our sensitivity to seeing dead wildlife. *Do you think this is true?*

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2) **Backyard Adventure** -- 20 minutes +

Activity A: Oh Deer! -- *requires access to outdoors, or large indoor space*

In Step 9: any deer that does not find its habitat component is "struck by a vehicle," and fatally injured. These participants may continue as habitat components in the next round.

Activity B: Audubon's Mission Migration Game -- *animated computer game, indoor option*

Activity C: The Windshield Test -- *requires access to at least one stationary motor vehicle. **

1) Divide participants into groups of 4 or more, according to how many vehicles are available at your location.

2) Give each group a sheet of blank copy paper. Explain that this paper represents the front windshield of their assigned vehicle.
3) Instruct each group to pretend they are an insect crash adjuster -- like a car insurance adjuster -- that is evaluating how many (# and type) of insects were lost crashing into your vehicle. Have each group **draw the location** of each insect, and **tally the number of each type** they found.
4) Compare observations among groups, and discuss.
    - What insect types were most common? Why?
    - What variables do you think impact these data?
    - Have you noticed a change in the number of insects on windshields over time?
      More info on the windshield phenomenon here.

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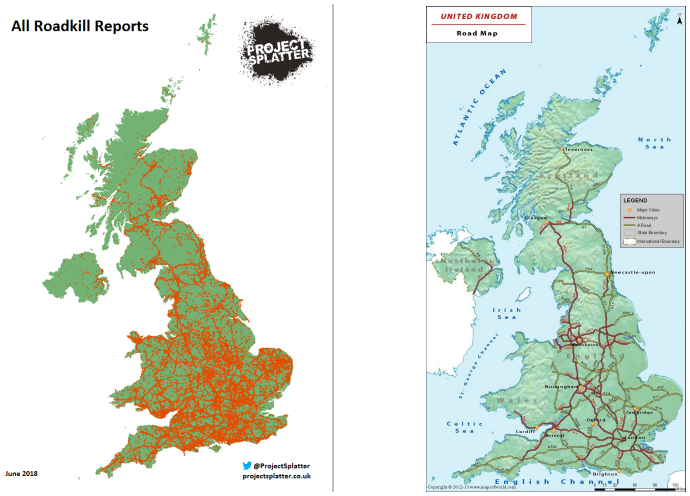
3) **Stewardship in Action** -- *20 minutes +*

Roadkill is preventable! -- *Natural Resource Officer segment, when available*

Explain existing efforts to reduce mortality from wildlife-vehicle collisions.

- **Vehicle safety features** -- more effective headlights, automatic braking
- **Highway design** -- lighting, signage, road reflectors, rumble strips, animal detection systems
- **Public awareness** -- distracted driving campaigns, driver education
- **Community science programs** -- ground-level research

    Maine Audubon Wildlife Road Watch
    California Roadkill Observation System
    Project Splatter (UK)



Note how roadkill reports cluster around important roadways.

- **Wildlife rehabilitation** -- contact a wildlife rehabilitation agency or intake veterinarian to assist an injured animal
- **Wildlife crossings** -- raised bridges or underpasses that can create **wildlife corridors** through fragmented habitat
  Optional video on design solutions here. Scientific American article here.

What else can we do to prevent roadkill across West Virginia?

Individual Roadkill Action Plan (RAP)

It's time to "put the rubber to the road" on your own action plan. You are part of the short and long-term solution to this widespread, devastating problem.

Think of the strategies we are already using to protect wildlife and their access to habitat. Think of where you live and go to school, and how you move through the environment. Think of where you have seen evidence of roadkill, or where wildlife may be at risk.

Identify one short-term action (next two weeks) and one long-term action (one year) you'll put into place, using this template. Lives are at stake!

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4) **Reflection and Discussion** -- 10 minutes +

Provide an opportunity for participants to share back their action plans. Discuss and look for opportunities to collaborate.

Identify an opportunity to share back your experiences implementing these action plans. Stick to it!

Related Lessons

- Landscape Scene Investigators -- using animal evidence to explain wildlife behavior
- Invasives and You -- exploring the impact of human disturbances on invasive plant establishment
- Don't Be Impervious -- exploring the impact of impervious surfaces on watershed health

Additional Resources

- WV Department of Natural Resources
- Drive Safely: Give Wildlife a Brake (Humane Society)
- Humanity's Footprint on Wildlife (Wildlife Conservation Society)
- Three Rivers Avian Center - wild bird rehabilitation and education organization, based in Summers County
- The Ecology of Transportation: Managing Mobility for the Environment
  edited by John Davenport, Julia L. Davenport

Related WV Science CSOs

S.6.LS.2 Students will evaluate competing design solutions for maintaining biodiversity and ecosystem services.

S.6.LS.7 Students will construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

S.7.ESS.7 Students will apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

S.8.LS.2 Students will construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.