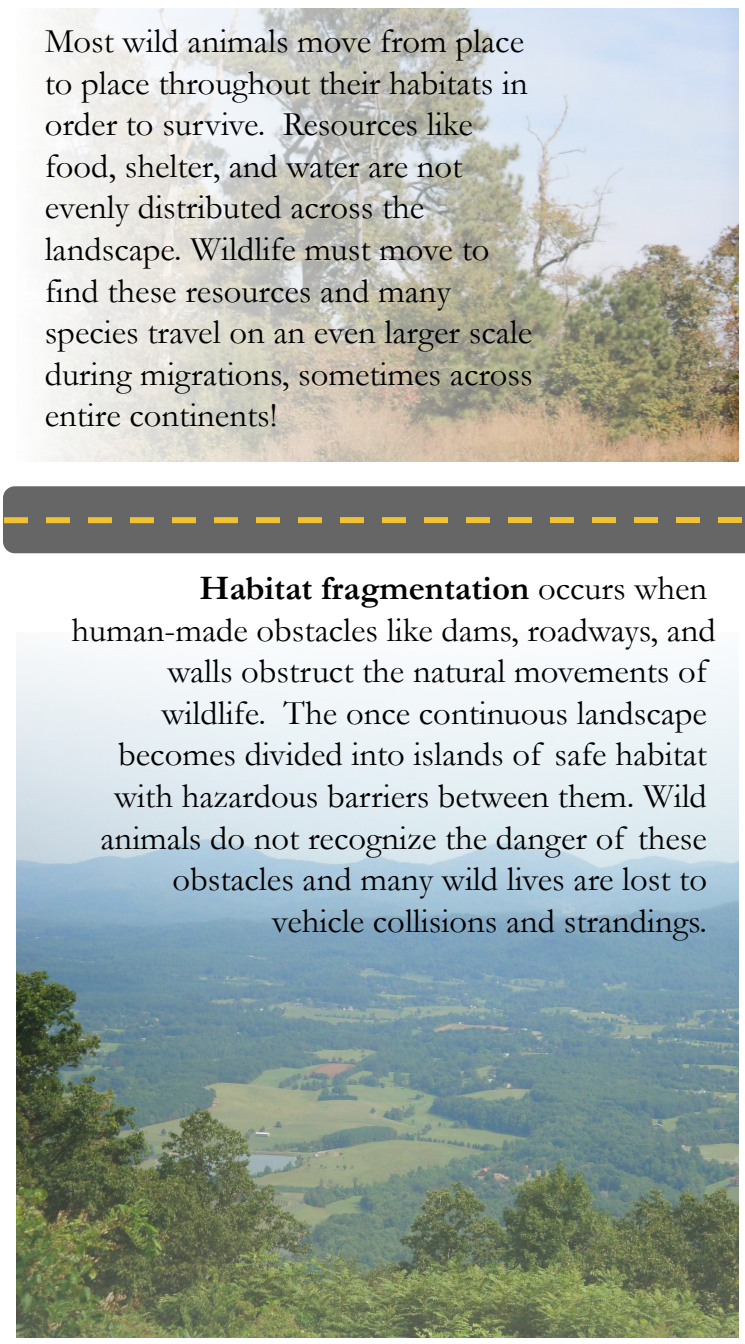
Habitat Islands and Wildlife Corridors

Season Three, Episode Two

Wildlife depends on natural habitats like woodlands, wetlands, rivers, and meadows to survive. Due to human development, these habitats are increasingly fragmented, separated by impassable or dangerous new barriers.

Most wild animals move from place to place throughout their habitats in order to survive. Resources like food, shelter, and water are not evenly distributed across the landscape. Wildlife must move to find these resources and many species travel on an even larger scale during migrations, sometimes across entire continents!

Wildlife corridors provide safe avenues for wildlife to access these different areas. Corridors may be natural overpasses, protected tunnels under highways, or protected pieces of habitat connecting larger habitat islands. Your own backyard may even serve as an important wildlife corridor.



Habitat fragmentation occurs when human-made obstacles like dams, roadways, and walls obstruct the natural movements of wildlife. The once continuous landscape becomes divided into islands of safe habitat with hazardous barriers between them. Wild animals do not recognize the danger of these obstacles and many wild lives are lost to vehicle collisions and strandings.

In Virginia, teams of researchers are working to learn more about how and where wildlife are most impacted by the dangers of habitat fragmentation. An important part of this research is related to understanding what species are experiencing vehicle collisions and where those collisions are most common. Using this information, we can make effort to minimize and mitigate our human impacts and find new ways to enhance wildlife corridors.

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Wildlife Corridors

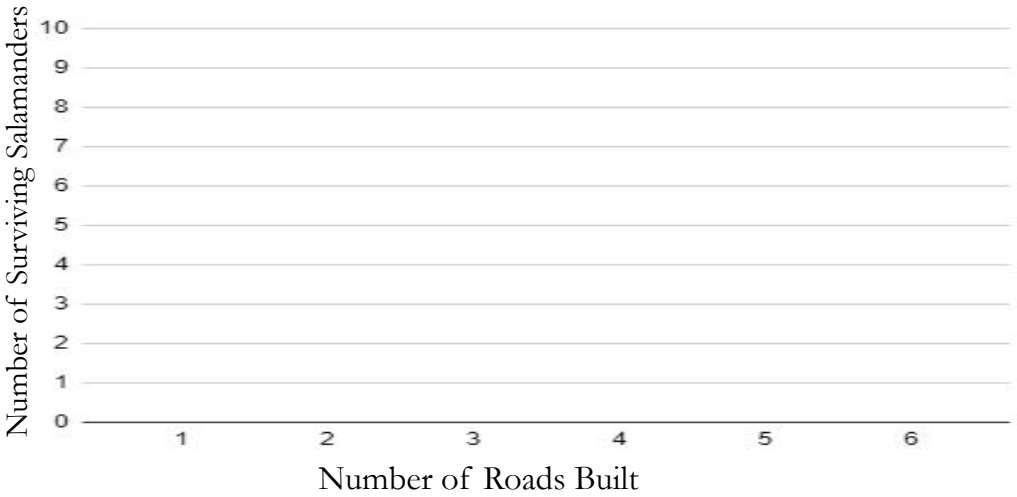
Salamander Crossing!

Many species of animals move to different areas of their habitats in order to access resources that they need during different times of the year. In Virginia, spotted salamanders move across their range to access vernal pools to breed in the early spring. As obstacles like roads are introduced into the habitat, the animals find themselves in danger of being killed or severely injured. In this exercise, we will explore how increased habitat fragmentation and exposure to these dangers impacts wildlife populations.

Instructions

- Find 10 identical small items for this exercise (e.g. paper clips, dimes, small candies, etc). These represent salamanders moving across the landscape. On the following page, a grid of squares represents habitat space. During the activity, you will add roads to your landscape by filling in squares in a straight line in any direction from one side to the opposite side of the grid. One road is already in place.
- For each stage of this exercise you will take a imaginary "snapshot" of the location of your salamanders on your landscape by dropping the handful of salamander tokens onto the grid. Each salamander that lands on open habitat counts as one surviving individual, while each salamander that lands on a road will not survive and should be removed from the next round.
- Complete the table provided, adding one road at a time and then dropping your remaining salamanders onto the landscape. Draw a bar graph showing what happens to the salamander population as more roads are built.

Number of Roads	Surviving Salamanders
1	
2	
3	
4	
5	



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Discussion Questions

These discussion questions are designed to inspire conversation and critical thinking, and promote a "big picture" understanding of topics covered in each episode. Questions may be answered individually, or out loud in a group setting.

Key terms and vocabulary that will help educators and students engage in discussion include:

habitat loss *habitat fragmentation* *habitat island* *adaptation*
wildlife corridors *conservation* *restoration* *mitigation*

What is the difference between habitat loss and habitat fragmentation? Is one worse than the other for wildlife? Think about your own community -- where you live, play, sleep, and eat. Are there signs of either habitat loss or fragmentation in those places?

In what ways are a real island and a "habitat island" similar? What physical adaptations and traits would make traveling from island to island easier for wildlife? What adaptations and traits might make travel more difficult?

A speeding vehicle is clearly seen as a potential danger when viewed from a human perspective. Why do you think many animals don't perceive them as a threat? Can you think of any other human-made object or pieces of equipment that may not be understood as dangerous to wildlife?

Roadways are a great example of barriers that introduce a threat to survival. What other changes to the landscape may also contribute to the fragmentation of habitat? What would it be like for wildlife moving through these barriers? Can you think of ways to mitigate these challenges?

As with many wildlife management issues, impacts on humans are something that must be taken into consideration. Wildlife corridors provide an excellent way for wildlife to stay safe -- are there any downsides for humans in constructing them? What challenges might someone face when planning or constructing a new wildlife corridor that would impact humans?

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Key Vocabulary Terms

This vocabulary may be useful in the discussion questions provided as well as in additional classroom application of the concepts covered in this episode.

Habitat loss, also known as habitat degradation or habitat destruction, is the process by which habitats experience a loss of biodiversity (the number of different species present) due to physical damage or destruction of the habitat resulting in the death or displacement of the organisms that lived there. This can occur on a large scale such as deforestation of rainforests or clearing land for construction, or on a small scale such as cutting down a single tree that served as a nesting site or turning over a log to see what lives there and not putting it back.

Habitat fragmentation occurs when *habitat loss* creates barriers of uninhabitable space separating pockets of suitable habitat. Fragmentation makes it more dangerous and difficult for animals to move from place to place and utilize their habitat fully and naturally and reduces the genetic diversity of populations. Fragmented populations are less stable than those in *conserved* continuous habitats and are at increased at risk of decline.

Habitat islands are fragmented areas of habitat that are surrounded and separated by areas of destroyed or degraded habitat. Habitat islands are created by *habitat fragmentation*.

Wildlife corridors are nature's highways. These are the routes and areas used by wildlife to move from place to place within their habitats. In healthy, *conserved* areas, wildlife determine where these corridors are by learning the most efficient ways to move from place to place. Due to *habitat loss and fragmentation*, scientists aim to create new wildlife corridors to *mitigate* these impacts, such as the salamander crossing discussed in this episode.

Adaptations are physical and behavioral traits that help animals survive. Animals adapt over evolutionary timescales to various pressures and influences of nature and human impacts.

Conservation of habitat refers to leaving a natural space as it is, uninfluenced or minimally influenced by human presence or impacts. The protected National Forest land on which the Wildlife Center of Virginia sits is a good example of conserved habitat.

Restoration is the process of attempting to return a habitat to how it was prior to habitat damage. Planting native dune vegetation on beaches eroded by human use is a good example of a habitat restoration project.

Mitigation is an effort to make up for unavoidable habitat loss by offering alternative options for wildlife. The salamander corridor project discussed in this episode is a good example of habitat loss mitigation.

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