

## Roads Influence Animal Genes

Roads connect people, but they separate animals.

Recall the Ecology Disrupted curriculum learning goals:

1. Human daily life can disrupt ecological function leading to environmental issues.
2. Scientists can collect data to investigate human impact local ecology.

Students watch additional Science Bulletins videos to learn about how human daily life can affect ecological function, and to pull out the ecological principles. An introduction to the video and background information are provided below.

While watching the Bulletins they will complete a graphic organizer with the following questions:

1. How have people changed the habitat in this example?
2. Why do people change the habitat? How does it help us?
3. How do the habitat changes impact populations in this area?
4. How do you know that the habitat is being changed and that local populations are affected? Describe the evidence or data.
5. Suggest how to solve this problem.

### Introduction

"Does anyone know what a badger is? Badgers are small mammals related to skunks that live forest habitats. Like the bighorn sheep, badgers also suffered from roads fragmenting their habitat. However, scientists and communities in Europe wanted to help the badgers so they came up with a plan to help them safely cross road. We are going to watch a Science Bulletins video like we did for the bighorn sheep, but this bulletin shows a way that we can help animals whose habitats are threatened by roads. Get ready to fill out your graphic organizers."

### Background Information

**Badger Biology:** European badgers are found in forests throughout Europe and East Asia. Their primary food source is earthworms, but they are omnivores and also eat insects, roots, dead organisms, and fungi. They are nocturnal and mostly move around at night.

**Badger Families:** Badgers live in family groups called clans that consist of up to twelve individuals. Usually several adults and their cubs live together in a burrow called a "sett". Badgers have a pecking order and there is typically one male that is the head of the clan. Young male badgers growing up in the clan may try to challenge the dominant male, and if they lose, they will set off to join another clan (and may have to travel across roads to do so). Badgers often use the same paths to get from their sett to feeding areas, and if roads are built in the way, they are at risk of being hit by cars.

**Badgers and Roads:** As road networks expanded in the 1970s, about 35% of the badger population in the Netherlands was killed crossing roads. To resolve the problem, the government of the Netherlands built over 600 tunnels to allow badgers to pass safely under the roads. Genetic evidence suggests that the tunnels are working, and badgers are safely crossing roads and interbreeding with distant badger populations.