

## Overview:

In “Warmer Earth Affects Air, Land, and Water,” presented at Bowling Green State University, Dr. Shannon Pelini focuses on three groups of organisms and how they provide evidence supporting climate change.

## Summary:

This excerpt, “Insects as Evidence of Climate Change,” has Dr. Pelini examining the changing activity of insects around the world within the context of climate change. She provides four factors that display the most prominent evidence of climate change through insects: shifts in their population, distribution, physiology, and phenology.

**ODE 9-12 STANDARD: Science; Course, Environmental Science; Topic 1, Earth Systems: Interconnected Spheres of Earth, Topic 2, Earth’s Resources, Topic 3, Global Environmental Problems and Issues**

## Discussion Questions:

1. What types of impact do you think an increase of insect populations has on the environment?
2. Phenology is the study of timing of life events in organisms. For example, phenology explains when insect eggs hatch in the spring or when they hibernate. Due to climate change, some insects start to hatch earlier than usual, prolonging the time they are active. How can this be detrimental to humans and plants?
3. If bee phenology changes so significantly that the species becomes active before plants blossom in the spring, what conflicts may arise?
  - a. What will happen to the bees?
  - b. How will the plants be affected?
  - c. How will humans be affected?

## Activity:

Present the [Climate Change Relationship Web](#) to the class.

1. Describe the ways changing seasonal patterns affect plants and insects.
2. Describe the ways habitat loss and extinction affect plants and insects.
3. How can all of these outcomes affect plants and insects?
4. What do you believe the other factors are that contribute to climate change?

## Resources:

NASA Global Climate Change Information: <https://climate.nasa.gov/>

Human Impact on the Environment: <https://wgpte.pbslearningmedia.org/collection/middle-and-high-school-resources/>

The Relationships between Insects, Plants, and the Climate (Slide 3): <https://www.slideshare.net/>

