



Teacher's Guide

Mystery of Disappearing Honeybees: Fusion of Form & Function NATURE Science Education Series

Grade Levels:

5-12

Subject Areas:

Sciences

Life Sciences

Biology

Ecology

World Geography & Cultures

Synopsis:

Provides a cross-cultural investigation of the mystery of the disappearing honeybee. As an introduction, films the unnatural process of transporting truckloads of honeybees to fertilize food crops. Makes the qualification that Colony Collapse Disorder (CCD) has resulted in fewer and fewer honeybees for beekeepers to transport. Details the anatomy of the honeybee that makes it a perfect example of the fusion of form and function. Also details the roles of drones, worker bees, the queen and the mystery of the honeybees' dance. Follows the CCD problem to a variety of laboratories investigating the pathology of bee diseases that are wiping out entire colonies and affecting our food supply. A section on the effect of pesticides follows the problem to Szechuan Province where human pollinators are used to maintain pear crops. Concludes with the discovery that a viral infection is the most likely cause of CCD but warns that bees are subject to many other stresses that can upset the ecological balance and wipe out our supplies of fruits and vegetables.

Learning Objectives: Students will:

- Explain why honeybees are important to the life of the planet.
- Describe the characteristics that make a honeybee an outstanding example of form and function.
- Describe the problems associated with Colony Collapse Disorder.
- Describe the social structure of the beehive or bee colony.
- Discuss the implications of our dependence on pollinators.

Vocabulary:

cornerstone, repercussions, fertilize, forage, nectar, protein, form, function, proboscis, mandibles, compound eyes, sensory, ocelli, serrated, static, ovaries, colony collapse disorder, replenished, forager, industrialization, habitat destruction, urbanization, agriculture, pollinators, invasive species, bankruptcy, human pathogen, pathogens, coroner, forensic autopsy, immune response, pesticides, toxic, lavender, regurgitating, enzymes, saliva, antibacterial, malnutrition, monoculture, contend, parasites, perfect storm, vulnerable, forage crops, venom, royal jelly, larvae, anthers, Africanized bee, consumption, vitality, gruel

Pre-Viewing Discussion:

What tiny creature evolved at the same time as flowering plants? Why was this evolutionary act so important to the life of the planet?

How are honeybees represented in art, poetry and mythology? Why do you think they are represented this way?

What is pollination? What foods are produced by pollination?

Do human lives depend in any way on the life of the honeybee? What would happen if honeybees disappeared?

Post-Viewing Discussion:

Why are honeybees shipped in tractor-trailer loads from Florida to Pennsylvania and Maine? Why is this process “unnatural”?

What is CCD? What pathogens cause diseases in bees? What is the primary cause of CCD? How does CCD affect us?

In what ways do honeybees illustrate a perfect fusion of form and function?

How are pear crops produced in Szechuan Province? Is human pollination an alternative for crop production in other parts of the world?

Further Activities:

Further investigate the causes and solutions for CCD using sources of information that are scientifically legitimate.

Investigate bee products that are marketed in different parts of the world.

Interview a beekeeper about the problem of CCD and the changes in his industry in recent years.

Investigate the history and uses for royal jelly.

Related New Dimension Media Titles:

Shape of Life series

Biological Classification series