

The Pollinators

DIRECTED BY: PETER NELSON



SPONSORED BY:



BEE'S WRAP[®]
REUSABLE FOOD STORAGE



MATERIALS & RESOURCES:

Accessing the Film

- Collective Eye Films offers access to this film through [Kanopy](#)

OR

- A [digital purchase license](#) is available for in-classroom and digital classroom use for the K-12 school through iTunes

OR

- [DVD for purchase](#)

Additional Materials Needed

- Permission from parents for students to watch the film - this could be a digital document or a printed and signed document
- Film Circle Role Descriptions
- Access to technology

SUMMARY AND DETAILS

The Pollinators is a cinematic journey around the US following migratory beekeepers and their truckloads of honey bees as they pollinate the crops we all eat. The challenges the beekeepers and their bees face en route reveal flaws to our simplified chemically dependent agriculture system. Farmers, scientists, chefs, and academics along the way give broad perspectives about the threats to honey bees, what it means to our food security, and how we can improve it.

Directed by: Peter Nelson

Released: 2020 (educational)

Year of Production: 2019

Running Time: 92 min

Language: English

Subtitle Options: English Closed Captions

Subjects: Environmental Studies, Science and Nature

To contact the director of the film email,

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BACKGROUND: WHY BEES?

Pollinators are representative of the interdependent and interconnected design of the ecological systems upon which all species depend. Bees are responsible for pollinating 70% of the top 100 food crops worldwide, accounting for 90% of the world's nutrition. According to the White House, pollinators contribute more than 24 billion dollars to the United States economy, of which honey bees account for more than 15 billion dollars through their vital role in keeping fruits, nuts, and vegetables in our diets. Harvested honey alone contributes \$317.1 million to the economy. These hardworking insects are also busy pollinating a wide variety of other plants, providing food for other animals, and in the case of honey bees, producing wax, honey, and propolis. According to the United States Department of Agriculture, a honey bee colony is worth 100 times more to the community than

to the beekeeper—meaning the value they deliver extends well beyond their actual price.

The collapse of bee populations has become the canary in the coal mine for the environmental movement, indicating a systemic issue with the health of the natural world. In a time when many people are overwhelmed by the challenges posed by global climate change, helping to save the bees provides an empowering action for the individual, further illustrating the importance of these “small but mighty” insects. Symbolic of altruism, collaboration, hard work, and natural engineering, bees have a lot to teach their human neighbors. The very act of stewarding honey bees provides an opportunity for individuals to take action and expand their own experience, knowledge, and perspective.

UNDERSTANDING THE PROBLEM

The students should read and watch the following prerequisite links in order to understand the bigger issues in the film. The educators should consider these items as conversation starters.

- ***The Pollinators*** World Bee Day Document -- attached below
- [The Critical Importance of Pollinators](#)
- [Benefits of Planting Flowers for Bees](#)

IMPORTANT TERMINOLOGY

- **Pollination** - the act of transferring pollen grains from the male anther of a flower to the female stigma in order for the plant to create offspring
 - [Learn more with What Is Pollination?](#)
- **Pollinators** - pollinating animals travel from plant to plant carrying pollen on their bodies, including bees, butterflies, beetles, hummingbirds, flies, bats, and many others
 - [Learn more About Pollinators](#)
- **Wind pollination** - all of the plants release billions of pollen grains into the air so that some will make contact with the female parts of other plants of the same species
 - [Learn more with Wind and Water Pollination](#)
- **Monoculture farming system** - a form of agriculture that is based on growing only one type of crop at a time on a specific farm, a polyculture system would have two or more crops growing at one time
 - [Learn more about Factors In Cropping](#)

- **Regenerative farming** - conservation and rehabilitation approach to food and farming systems, the goal is to strengthen the health and vitality of the soil by focusing on topsoil regeneration, increasing biodiversity, and improving the water cycle
 - [Learn more about Regenerative Farming at Green Fire Farm](#)
- **Neonicotinoids** - the most common and widely used class of neuro-active insecticides that have been linked with the decline of the bee populations worldwide
 - [Learn more about How Neonicotinoids Can Kill Bees](#)
- **Commercial Beekeeping** - people who provide a service of renting managed beehives to farmers to help pollinate crops, this service is part of a larger system of agriculture and the food industry
 - [Learn more about Starting a Small Beekeeping Operation](#)

FILM CIRCLE: ACTIVITY DETAILS

The **Film Circle Activity** is a structured group project where four middle school age to high school age students are assigned specific roles to perform according to their interest and/or abilities. Each student's goal is to analyze the film, *The Pollinators*, using their own unique perspectives and present conclusions to the group. Every role is to be completed before, while, and after watching the segments of the film.

The process is scaffolded at every level, beginning with background information, pre-reading requirements, and important terminology to help the students prepare for what they are going to see in the film. The students and educators can decide if they will rotate through the roles, giving each student an opportunity to try each part, or if they will keep their roles throughout the project.

FILM CIRCLE: PURPOSE AND GROUPING RECOMMENDATIONS

The purpose of this activity is to encourage a student-driven discussion while creating accountability within the group through specific tasks to be completed at an agreed-upon meeting time. The recommended grouping for this project is multiple small groups consisting of four students per group. This allows students to work in an intimate group and pinpoints speaking skills as an area of communication that students can practice with educational oversight.

THE POLLINATORS CONTENT DETAILS

The recommendation is to watch the film in sections, allowing the students to absorb the information and seek supporting documentation per their assigned role. The following is a description of the content in each of the three sections of the film.

Commercial Beekeeping (beginning - 26.32) -- California almond pollination, complexity inside of the honey bee hives, managed honey bees versus native pollinators, causes for the loss of honey bees to date, loss of habitat, loss of food sources, pesticide usage.

Crop Pollination and the Bigger Problems (26.33-50.28) -- current farming practices, issues facing farmers versus what the consumer wants, communication among the farmers/beekeepers, re-queening and hive splitting, varroa mites, pesticides, poor nutrition, the economics of the cost of crop versus the cost of bees, impact of biofuels.

Regenerative Farming Practices (50.29-end) -- pollinator strips, crop rotation, plant diversity, sustainability of the land, why corn and soy get a “bad name,” bees as the canary in the mineshaft, soil quality, what a well-managed farm looks like, planting a dummy crop to trap pests (pumpkins and blue hubbard squash), regenerative agriculture, buy-in from local farmers to spread techniques, honey harvesting, food deserts versus pollinator-friendly yard, educational efforts with children.

FILM CIRCLE: STUDENT ROLES

Director

This student is ‘directing’ the project at all times. She is responsible for keeping the team running smoothly and should act as a liaison between the group and the educator. She will also be responsible for the following contributions in order to promote group discussion about the film:

- Find connections between the film and the world outside, links to articles, books, other relevant videos, social media campaigns, etc.
- Current happenings at school or in the community that relate to the film
- Current stories in the news that relate to the film
- Information about the connection between pollinators and food production-- **Food Insecure**
- Pick specific parts of the film and articles that you want to assign the group to read and discuss

Producer

This student is checking to see if her team is on task throughout the project. She should begin each group meeting with a brief summary of the portion of the film the students are discussing. This student is also responsible for sourcing and/or creating questions for the group. She should consider the following when designing questions for prompting the discussion:

- **The plot** -- what is the reason for the director's approach to the subject matter
- **A cast member** -- is he motivated based on his background or job security, is this person a scientist, beekeeper, farmer, etc. How does his job affect his opinion on the matter?
- **A specific quote** -- something that makes you stop and think, a carefully worded choice on the part of the cast member, and why he would choose to make that comment. Access The Pollinator film script [here](#).
- Something you'd like to ask the director about a choice made in the film.
- Something you would have liked for the director to have done differently.
- Dig into the heart of the matter from both points of view, consider how the farmer would feel, the consumer, the scientist, the commercial beekeepers, etc.

Screenwriter

This student will focus on researching background information on any topic relevant to this portion of the film. She should consider the following when conducting research:

- The geography, weather, culture, or history of the locations in the film. The locations should include: The Central Valley, California, Lewisburg, Pennsylvania, Kern County, California, Hudson Valley, New York, Pocantico, New York, South Dakota
- Important information about any of the cast including the director, his/her background, and/or business -- [list of cast](#)
- Pictures, objects, posters, or other materials that support the film
- The history, definition, explanation of unknown words or farming practices highlighted in this portion of the film
- Information you found interesting and wanted to learn/share more about

Graphic Designer

This student will summarize the film through graphic representations of the main scenes. This role utilizes strong visual intelligence and sequential thinking. By carefully tracking where the action takes place during the film, this student should be able to pinpoint the key themes for her presentation.

This student will create a presentation to share with other groups -- this could be a slideshow, [video essay](#), infographic, podcast, design a digital poster, write a blog, plan a social media campaign, write and illustrate a comic strip, etc. She should include the following:

- Analyze and explain to the group the choices by the director from the film with regards to music, lighting, time-lapse, etc. Research how these choices affect the audience
- Gather information from your group on both sides of the discussion as well as any relevant facts and information

The Pollinators: Educator's Guide for a Film Circle

COMMON CORE STANDARDS

GRADE 6

- [CCSS.ELA-LITERACY.SL.6.1](#)
- [CCSS.ELA-LITERACY.SL.6.1.A](#)
- [CCSS.ELA-LITERACY.SL.6.1.B](#)
- [CCSS.ELA-LITERACY.SL.6.1.C](#)
- [CCSS.ELA-LITERACY.SL.6.1.D](#)
- [CCSS.ELA-LITERACY.SL.6.2](#)
- [CCSS.ELA-LITERACY.SL.6.3](#)
- [CCSS.ELA-LITERACY.SL.6.4](#)
- [CCSS.ELA-LITERACY.SL.6.5](#)
- [CCSS.ELA-LITERACY.SL.6.6](#)

GRADE 7

- [CCSS.ELA-LITERACY.SL.7.1](#)
- [CCSS.ELA-LITERACY.SL.7.1.A](#)
- [CCSS.ELA-LITERACY.SL.7.1.B](#)
- [CCSS.ELA-LITERACY.SL.7.1.C](#)
- [CCSS.ELA-LITERACY.SL.7.1.D](#)
- [CCSS.ELA-LITERACY.SL.7.2](#)
- [CCSS.ELA-LITERACY.SL.7.3](#)
- [CCSS.ELA-LITERACY.SL.7.4](#)
- [CCSS.ELA-LITERACY.SL.7.5](#)
- [CCSS.ELA-LITERACY.SL.7.6](#)

GRADE 8

- [CCSS.ELA-LITERACY.SL.8.1](#)
- [CCSS.ELA-LITERACY.SL.8.1.A](#)
- [CCSS.ELA-LITERACY.SL.8.1.B](#)
- [CCSS.ELA-LITERACY.SL.8.1.C](#)
- [CCSS.ELA-LITERACY.SL.8.1.D](#)
- [CCSS.ELA-LITERACY.SL.8.2](#)
- [CCSS.ELA-LITERACY.SL.8.3](#)
- [CCSS.ELA-LITERACY.SL.8.4](#)
- [CCSS.ELA-LITERACY.SL.8.5](#)
- [CCSS.ELA-LITERACY.SL.8.6](#)

GRADE 9-10

- [CCSS.ELA-LITERACY.SL.9-10.1](#)
- [CCSS.ELA-LITERACY.SL.9-10.1.A](#)
- [CCSS.ELA-LITERACY.SL.9-10.1.B](#)
- [CCSS.ELA-LITERACY.SL.9-10.1.C](#)
- [CCSS.ELA-LITERACY.SL.9-10.1.D](#)
- [CCSS.ELA-LITERACY.SL.9-10.2](#)
- [CCSS.ELA-LITERACY.SL.9-10.3](#)
- [CCSS.ELA-LITERACY.SL.9-10.4](#)
- [CCSS.ELA-LITERACY.SL.9-10.5](#)
- [CCSS.ELA-LITERACY.SL.9-10.6](#)

GRADE 11-12

- [CCSS.ELA-LITERACY.SL.11-12.1](#)
- [CCSS.ELA-LITERACY.SL.11-12.1.A](#)
- [CCSS.ELA-LITERACY.SL.11-12.1.B](#)
- [CCSS.ELA-LITERACY.SL.11-12.1.C](#)
- [CCSS.ELA-LITERACY.SL.11-12.1.D](#)
- [CCSS.ELA-LITERACY.SL.11-12.2](#)
- [CCSS.ELA-LITERACY.SL.11-12.3](#)
- [CCSS.ELA-LITERACY.SL.11-12.4](#)
- [CCSS.ELA-LITERACY.SL.11-12.5](#)
- [CCSS.ELA-LITERACY.SL.11-12.6](#)

SUPPORTING ARTICLES

- [Clemson Study Finds Wildflowers Create Pollinator Harmony for Watermelons](#)
- [Local Food Depends on Pollinators](#)
- [A Bee Economist Explains Honey Bees' Vital Role In Growing Tasty Almonds](#)
- ['Like Sending Bees to War;' the deadly truth behind your almond milk obsession](#)
- [Why California Almonds Need North Dakota Flowers \(And a Few Billion Bees\)](#)
- [The Plight of the Bees](#)
- [The Value of Pollinators to the Ecosystem and Our Economy](#)
- [The Benefit of Bees](#)
- [Pollinators In Peril](#)
- [A Panel on the Dangers Pesticides Pose to Bees](#)
- [Neonicotinoid Pesticides Are Slowly Killing Bees](#)
- [Regenerative Agriculture Part 4: The Benefits](#)
- [Monocultures in America: A System that Needs More Diversity](#)
- [Industrial Agriculture 101](#)

The Pollinators

WORLD BEE DAY

The Pollinators joins the **World Bee Day** celebration of bees and their critical role in sustaining food security, livelihoods, and biodiversity all around the world.

"Bees are just one of those things that benefit all the way around. . . We know bees are the right thing to have on the landscape."

BRET ADEE

Adee Honey Farms, *The Pollinators*

The Pollinators is a cinematic journey around the US, following migratory beekeepers and their truckloads of honey bees as they pollinate the crops we all eat. The challenges the beekeepers and their bees face en route reveal flaws to our simplified chemically dependent agriculture system. Farmers, scientists, chefs and academics along the way give broad perspectives about the threats to honey bees, what it means to our food security and how we can improve it.

UN(BEE)LIEVABLE FACTS

- 1 IN 3** 1 of every 3 bites of food we eat depends on honey bees and other pollinators
- \$15 B** Honey bees increase our nation's crop values by more than \$15 billion each year with pollinators contributing more than \$20 billion to the US economy
- 10 M** The US supports the largest migratory honey bee population in the world > billions of honey bees get trucked around the US pollinating our food. Each semi-truck carries over 10 million honey bees
- 4,000** There are approximately 4,000 species of native bees in North America and 20,000 around the world.
- 1600's** The European honey bee *Apis mellifera* are not native to North America but came with European settlers in the 1600's

FOOD & BEES

"The general public should know our food system is threatened by the fact that the bees are in trouble. And they should care about that because they eat food."

SUSAN KEGLEY

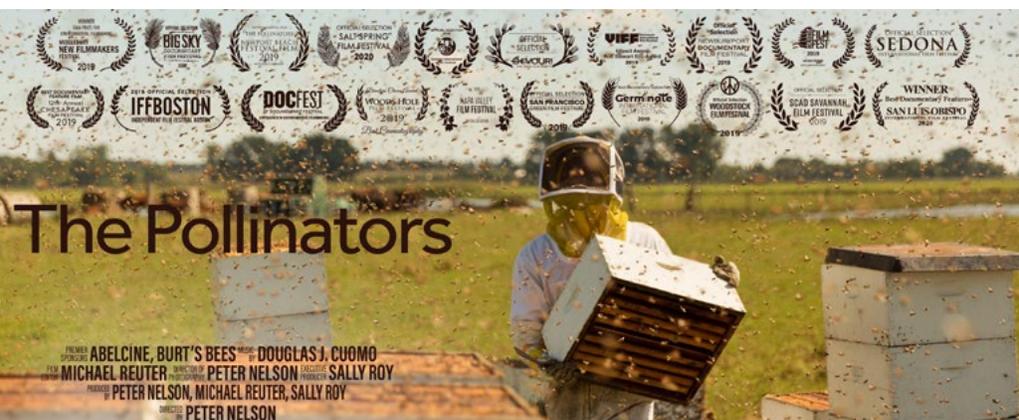
CEO and Founder of the Pesticide Research Institute, *The Pollinators*

Pollination: The honey bee is the most important insect pollinator of cultivated crops.

Pol-li-na-tion / pä-lə-'nā-shən/: The transfer of pollen from a male part of a plant to a female part of a plant, later enabling fertilization and the production of seeds and fruit most often by an animal or by wind.

Our food system is dependent upon commercial migratory beekeepers to move honey bee populations and maintain our food security.

Honey bees pollinate more than 130 fruits, vegetables and nuts, some of the most nutritious food in our diet, such favorites as almonds, apples, avocados, blueberries, cherries and cranberries.



NOW AVAILABLE DIGITALLY

Visit *The Pollinators* website to learn more: thepollinators.net/take-action

Some 84% of the crops grown for human consumption need bees or other insects to pollinate them. Bee pollination not only results in a higher number of fruits, berries or seeds, it may also give a better quality of produce.

The almond bloom in California's Central Valley is the largest managed pollination event in the world. The annual two billion pound harvest is dependent on honey bee pollination.

The Staggering Rate of Honey Bee Colony Losses. We are utilizing almost 100% of our managed commercial bee supply. At the current rate of honey bee colony decline, the USDA is no longer confident that we can meet the pollination demands of US agricultural crops.



RETHINK HOW WE PRODUCE OUR FOOD

Support Regenerative Agriculture, a holistic approach to farming and grazing practices that improves soil health, crop resilience and nutrient density. Soil is not dirt but a living, thriving thing that is necessary to bee and human health.

It's main principles include:

-  **MINIMIZE** or eliminate tillage
-  **REBUILD SOIL** organic matter
-  **ALWAYS HAVE A LIVING ROOT** in the soil
-  **INCREASE THE DIVERSITY** of crops grown
-  **COMBINE** crops and livestock production

UNDERSTANDING THE PROBLEMS

"Farmers need to realize that the bees are like one of the first lines of defense. If the bees are disappearing, what else has disappeared already?... That's kind of the canary in the mine shaft."

LUCAS CRISWELL
Farmer, Criswell Acres,
The Pollinators

The large decline in honey bee population is complex and not due to one single factor.

This "triangle of decline" includes:

Parasites: Varroa mites weaken honey bees and transmit diseases

Pesticides: Chemical pesticide exposure in the environment can weaken and kill bees

Poor Nutrition: Due to lack of diverse forage

Monoculture Farming, the cultivation of one crop on a landscape, provides limited food resources and becomes a food desert for pollinators once flowers are gone. Corn is one of the largest monoculture crops in the US - Five percent of the land in the lower 48 states is planted with corn.

Neonicotinoids: A common class of systemic pesticide, neonicotinoids, are the most widely used insecticide in the world and studies have linked them to bee decline. Neonics are very toxic to bees, take years to degrade in the environment, and are water soluble so they can disperse and contaminate surrounding areas and vegetation.

Habitat Loss from monoculture farming and development. Maintaining a sequence and rotation of diverse flowering plants over the seasons is key to a healthy habitat for pollinators.

Honey bees are a 'sentinel' or indicator species - they signal the health of the environment, the wildlife, and all the ecology along the food chain.

HOW TO (BEE) THE CHANGE

Support Pollinator Health and the Pollinator Protection Movement:



Think locally - Plant a Pollinator Garden.

Incorporate native species of flowering plants suitable for local climate and region to attract and benefit local pollinators.



Stop using chemicals,

pesticides, and herbicides in your home garden and lawns.



Cut down on cutting.

Reduce mowing and allow flowering groundcover to remain in the lawn as forage for pollinators.



Leave it for the bees.

Leave plant stalks and other organic materials in place during fall garden maintenance for hives; wait to conduct outdoor spring cleanup until after native pollinators appear.



Buy local honey

and support your local beekeepers.



Keep bees.

Join the community of beekeepers across the country and around the world.



Support local economies

and buy your food from farmer's markets and community supported agriculture (CSA's) in order to sustain local farms.



Act globally & locally.

Support legislation and policy changes on the federal, state, and local level that encourage pollinator protection. Think beyond farming to include municipalities, communities, and universities.