

# The Pollinators



**DISCUSSION  
GUIDE**





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## USING THE GUIDE

***The Pollinators* is a story of both beauty and urgency. The documentary follows migratory commercial beekeepers as they fight to survive an environmental crisis threatening millions of honey bee hives. It is a story of individuals and systems working together to save our fruits, vegetables, nuts and the future of our food supply.**

This Discussion Guide, created to support community and educational screenings of ***The Pollinators***, explores the agricultural, economic and environmental importance of pollinators in the U.S. The guide is also a tool to engage audiences in critical conversations about pollinator decline and expands upon the many creative solutions for protecting honey bee and native bee populations such as regenerative farming, organic agricultural practices and habitat protection.

## ABOUT THE FILM

***The Pollinators*** is a cinematic journey around the United States following migratory beekeepers and their truckloads of honey bees during the annual growing season as they pollinate the flowers that become the fruits, nuts and vegetables we all eat. The many challenges the beekeepers and their bees face en route reveal flaws in our simplified chemically dependent agriculture system. Beekeepers, farmers, scientists, chefs and academics give a broad perspective about the threats to honey bees, what it means to our food security and how we can improve it.



## FROM THE FILMMAKER

### **Thank you for watching *The Pollinators*.**

We hope this Discussion Guide is a useful tool for your school or group to help guide and direct your conversations about the importance of bees to our food system, pollinator decline, farming and our environment. As a long time beekeeper, I know the subject of bees is a natural conversation starter. There is so much to learn about bees and their essential role in our food production and ecosystems and there are many ways that we can make it better for honey bees and native pollinators alike. The issues we address in the film are ones that affect all of us, every time we sit down for a meal. There is something about honey bees that touches people: their beauty, their indefatigable work ethic, their efficiency – and especially their honey – make them a charismatic insect, with fascinating and complex societies that are a window into the natural world that we all long for. While some of the issues we address in the film are concerning, what makes this topic so interesting to me is that there are actions that each and every one of us can take to make it better.

I hope you enjoy the film and that it will give you a new appreciation of these wonderful and important insects and of the passionate beekeepers, scientists and farmers that work hard to help keep them going.

**PETER NELSON**  
Director, Producer & Cinematographer  
*The Pollinators*


















**BACKGROUND:**  
THE WONDER  
OF BEES

*“Bees are so fascinating. When you first go into a beehive, you’re worried about getting stung, and then as soon as you start watching them and seeing them on the combs and communicating with each other, all of the chemical signals that keep the worker bees doing the right thing. It’s just so fascinating, so complex. And it mostly works until we get in the way of it.”*

**SUSAN KEGLEY, PhD**  
Principal and CEO of Pesticide  
Research Institute, *The Pollinators*

# DID YOU KNOW?

Naturalist Rachel Carson shared, “The more clearly we can focus our attention on the wonders and realities of the universe, the less taste we shall have for destruction.” Carson’s words resonate more than ever – to know more about our natural world fosters a deep love and desire to nurture and sustain its beauty.

-  *The oldest known fossil evidence for modern bees is 100 million years old and was found in the Castillo Formation located in Patagonia, Argentina.<sup>1</sup>*
-  *Honey bees are essential or important pollinators for more than 90 common crops<sup>2</sup> we eat including: almonds, avocados, apples, blueberries, cranberries, squash, cherries, peaches, pears, melons, broccoli, citrus fruits and also important seed crops like onions and carrots.*
-  *One out of every three bites of food Americans eat depends on honey bees and other pollinators.<sup>3</sup>*
-  *Honey bees use the sun as a compass. They can see polarized light as well as the ultraviolet portion of the light spectrum to help guide them to flower food sources.<sup>4</sup>*
-  *There is evidence that honey bees also use magnetic fields to orient themselves to the world.<sup>5</sup>*
-  *Honey bees are social and communicate with one another through chemical signals called pheromones, sight and movement, most notably the “waggle dance.”<sup>6</sup>*
-  *Honey bees are driven to defend their hive and return to their particular hive and queen. Each queen emits a unique pheromone and the bees recognize their queen and the other bees in their hive through this chemical signal. Their queen’s pheromones are imprinted upon their chemical memory and serve as a kind of North Star.*
-  *A honey bee hive consists of 60,000 - 80,000 bees in the summer and 20,000 - 30,000 in the winter.*
-  *During honey production periods (spring and summer), a worker honey bee’s life span is about 6 weeks.*
-  *All worker honey bees are female. A small percentage of honey bees in a hive are drone bees which are male.*
-  *Queen honey bees can lay up to 2,000 eggs a day and a queen’s productive life span can be 3 - 5 years.*

*The average foraging honey bee visits **2,000 flowers a day.***

*The average honey bee makes only **1/12 of a teaspoon of honey** in its lifetime.*

*To make one pound of honey, worker bees in a honey bee colony fly **55,000 miles** and collect nectar from **2 million flowers.***

<sup>1</sup> <https://www.nationalgeographic.com/science/2020/02/oldest-ever-fossil-bee-nests-discovered-in-patagonia/>

<sup>2</sup> <https://www.fda.gov/animal-veterinary/animal-health-literacy/helping-agricultures-helpful-honey-bees>

<sup>3</sup> <https://www.ree.usda.gov/pollinators>

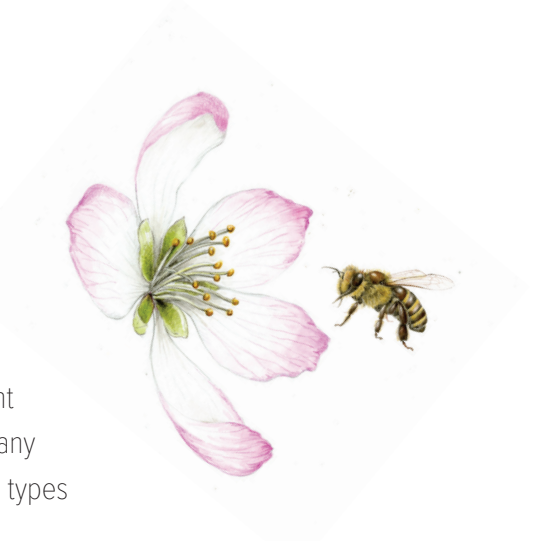
<sup>4</sup> <https://www.beeeculture.com/bees-see-matters/>

<sup>5</sup> <https://www.nature.com/articles/srep23657>

<sup>6</sup> <https://askabiologist.asu.edu/bee-dance-game/introduction.html>

# POLLINATION

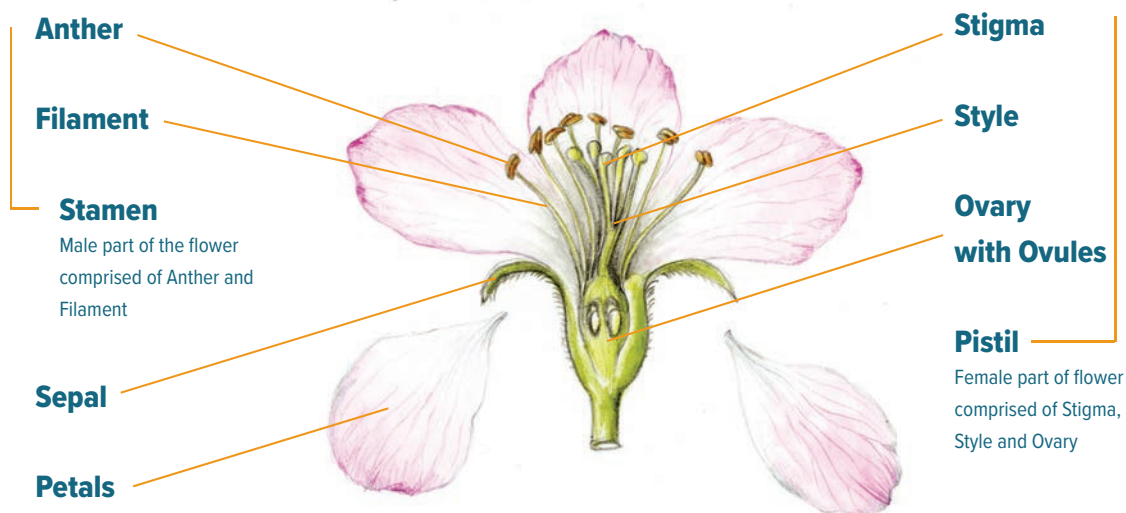
Flowering plants and trees need pollination in order to reproduce. By doing so, plants produce many of the fruits, vegetables, nuts and seeds that we all eat. Besides honey bees, pollination is done by many other species of native bees and other insects including butterflies, beetles and flies. Other animals are also important pollinators including some birds, bats, and even a species of lemur. Many grain crops like wheat, rice and corn are pollinated by wind. For these types of grass plants, the pollen is blown from one plant on to another.



Honey bees pollinate flowers by collecting and spreading pollen as they forage for food. Bees land on a flower to gather nectar which they take back to the hive to be made into honey. As a bee crawls into the flower, she sips the nectar through her proboscis – a long, straw-like tongue. As she gathers nectar she also brushes the anthers on the flower that hold the pollen and the sticky pollen clings to the hairs covering her entire body – even her eyeballs! She will also collect pollen on her corbiculae or “pollen baskets” on her back legs and take the pollen back to the hive where it is consumed as a key component of a bee’s diet along with honey.

## Pollination and Fruit

Pollination occurs when some pollen gets brushed or falls off the anther (the male part of a flower) on to the bee and is carried to the next flower the bee visits. A grain of pollen that lands at the top of a flower’s sticky pistil (the female reproductive part of the flower consisting of stigma, style and ovary) will move down the style and end up in the ovary where seeds develop. Once a flower has been sufficiently pollinated, the petals will fall off the flower and the ovary will swell up and transform into a fruit, vegetable or nut. It may take multiple visits by a pollinator to achieve full pollination of a flower. Honey bees observe floral fidelity, meaning after they leave one blossom, they will look for the same variety of flower as their next stop on that foraging trip.



# BEES ARE A SENTINEL SPECIES

With climate change, plants may bloom earlier, shifting the cycle of foraging for pollinating insects. Flowers and their pollinators depend upon each other for survival and reproduction. If they are out of sync, it can be detrimental to both. Bees, particularly honey bees, are so widely studied around the world they are an indicator of the health of an environment.

*“Bees are important for all kinds of reasons. They’re important because we’re not capable of making all kinds of things grow by ourselves. It’s not some kind of magic, it’s a deep biological process of which bees are a part. But bees are also important to us because they’re a very good kind of sentinel signal for the trouble that we’re in. There they are every day out in the world, foraging through every corner of the rural landscape. If suddenly one year 25% of them show up missing, that means there is something wrong with that landscape.”*

**BILL McKIBBEN**

Author & Environmentalist, *The Pollinators*



Bees are essential within an interdependent system.

- Honey bees need flowers for their food source (nectar to turn into honey as their source of carbohydrates, and pollen for protein, vitamins and minerals).
- Flowers need the bees for pollination which is necessary for their reproduction.
- Bees and flowers have co-evolved over millennia and some flowers need unique and specific pollinators to be able to reproduce.
- Humans and other animals need bees to pollinate flowers to turn them into the fruit, nuts, and vegetables we eat.
- Honey bee hives have large populations and can be easily relocated which make them well suited for commercial crop pollination.



# THE LANGUAGE OF HONEY BEES



Out of the 20,000+ bee species on earth, and approximately 4,000 in North America, seven are recognized as honey bees within the genus *Apis*.

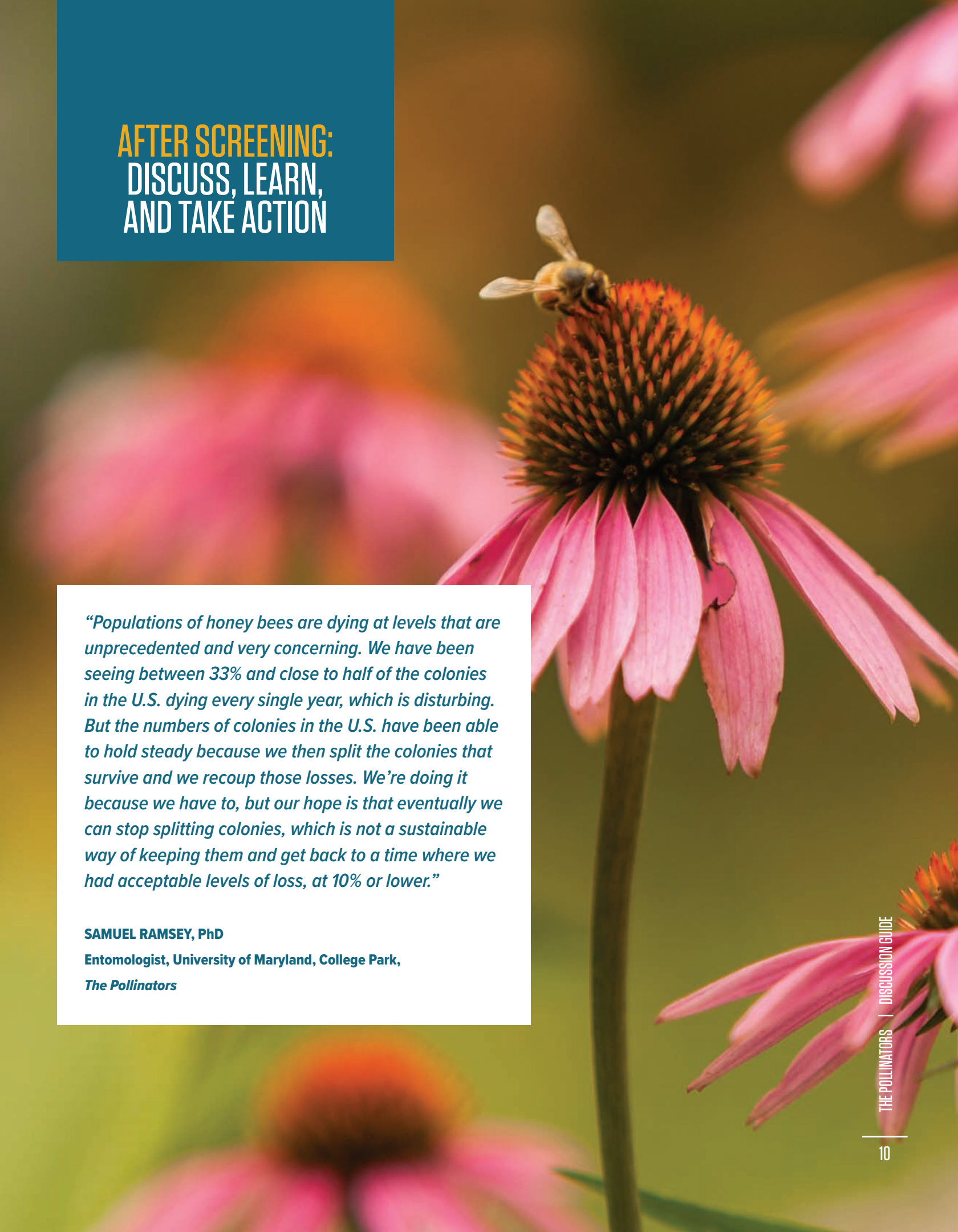
*Apis mellifera*, the Western or European honey bee, is the one familiar to most of us by the stacking hive boxes that we see on farms and in backyards and also for the beekeepers who take care of them. *Apis mellifera* is the only honey bee that lives in North America, but is not native to the continent and came to this region with early European settlers.

Honey bees are considered super-organisms due to their complex social systems and dynamic, tight-knit interactions with one another and their environments. A colony numbers in the tens of thousands of bees, 90% of which are female worker bees who maintain the hive and populations. There is a single queen who can lay eggs for several years. Male drones are responsible for the fertilization of new queens.<sup>8</sup>

Honey bees live in a eusocial society which means that they depend on the other bees in their hive for their survival. Honey bees work cooperatively and decide what the hive needs through collective decision making. Worker bees have many different roles within the hive over their short six week lifespan. Depending on the age of the bee and what tasks need to be done for the colony, they may work as nurse bees, guard bees, queen attendants, wax comb builders and foragers.

Most of the rest of the species of bees in the world are solitary bees, meaning a single female bee emerges, mates, builds and provisions a nest and lays eggs that will hatch the next year.

<sup>8</sup> <https://thebeeconservancy.org/why-bees/>



**AFTER SCREENING:  
DISCUSS, LEARN,  
AND TAKE ACTION**

*“Populations of honey bees are dying at levels that are unprecedented and very concerning. We have been seeing between 33% and close to half of the colonies in the U.S. dying every single year, which is disturbing. But the numbers of colonies in the U.S. have been able to hold steady because we then split the colonies that survive and we recoup those losses. We’re doing it because we have to, but our hope is that eventually we can stop splitting colonies, which is not a sustainable way of keeping them and get back to a time where we had acceptable levels of loss, at 10% or lower.”*

**SAMUEL RAMSEY, PhD**

**Entomologist, University of Maryland, College Park,  
*The Pollinators***

# DISCUSSION QUESTIONS

Before delving into the suggested topics, focus questions, and discussion prompts raised in **The Pollinators**, consider starting your post-screening event with these general questions:



- *What questions did **The Pollinators** raise about the American agricultural system?*
- *What was new information?*
- *What questions about honey bees remain unanswered?*
- ***The Pollinators** shows the beauty of the honey bee alongside the current threats facing bees and all native pollinators. After watching the documentary, are you more or less hopeful about the future? Why?*
- *What challenges do you think are the most difficult to overcome in protecting honey bees and other native pollinators? What would be your recommendations?*



## DISCUSSION TOPICS TO DELVE DEEPER

**The Pollinators** explores what beekeepers, farmers, scientists and chefs are confronting with annual losses of honey bees and offers consumers and growers concrete and creative solutions for every individual to adopt.

As you facilitate community and educational events consider these framing topics and the resources recommended in each section including:

- > *A focus question to help frame the discussion.*
- > *Excerpted quotes from the documentary to spark conversation.*
- > *Recommended discussion topics.*



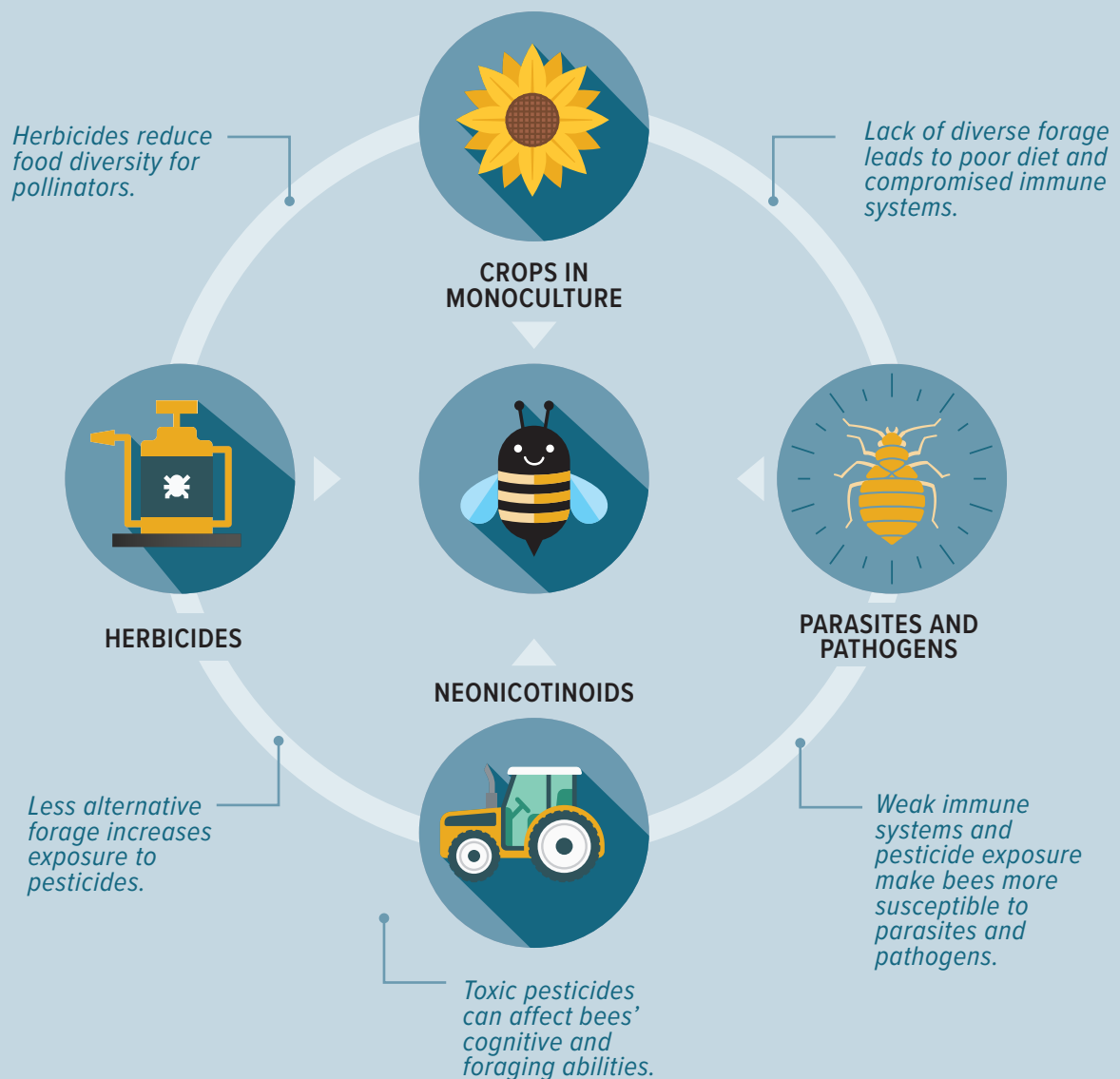
# IT IS NOT ONE THING: THE HEALTH AND HABITAT OF THE HONEY BEE

**Focus  
Question:**

Why are the losses of honey bees and other pollinators a challenging problem to solve?

## POLLINATORS ARE STRESSED

Interacting stresses lead to steady declines in bee populations.



# PARASITES



**VARROA MITES** (*Varroa destructor*) are one of the most invasive and destructive parasites for the honey bee and are responsible for massive numbers of honey bee colony losses.

Essentially, the Varroa mites are a modern honey bee plague.<sup>9</sup> Arriving in the United States in the 1980s, the parasitic Varroa mites originated in Asia and as a result, the European honey bee *Apis mellifera* has developed little resistance. The mated adult female Varroa mites enter the brood cells right before the bees cap the pupae and feed on the growing bee as well as on adult honey bees. This process can damage honey bees because like mosquitos, Varroa mites can transmit pathogenic viruses and can cause deformities to bees such as misshapen wings leading to an inability to fly. Viruses can weaken the bee's immune system which causes them to be more susceptible to the effects of pesticides and generally lowers the numbers of bees that can go out foraging and get more food.

<sup>9</sup> <https://www.ars.usda.gov/oc/br/ccd/index>



# PESTICIDES



**PESTICIDES** are frequently used in agriculture to kill, repel, or control pests or diseases on a plant. Pesticides weaken a bee's immune system, making them less healthy and can also lead to reproductive failure, navigation problems and shorter lifespans.

In ***The Pollinators*** we learn that pesticides sprayed on one farm can negatively affect and kill bees on a neighboring farm. Bees may encounter pesticides while they are foraging or the pesticide spray may drift beyond the targeted crop.

The *precautionary principle* is a decision-making tool in environmental law in the European Union that states that when evidence shows that a given activity causes some threat or harm to the public or the environment, general precautionary measures should be taken.<sup>10</sup> The United States does not observe the *precautionary principle* with regards to pesticides.

*Neonicotinoids* are a common class of systemic pesticide and studies have linked them to bee decline. Neonics are toxic to bees, take years to degrade in the environment and are water soluble so they can disperse and contaminate surrounding areas, vegetation and water tables<sup>11</sup>

<sup>10</sup> [https://ec.europa.eu/environment/integration/research/newsalert/pdf/precautionary\\_principle\\_decision\\_making\\_under\\_uncertainty\\_FB18\\_en.pdf](https://ec.europa.eu/environment/integration/research/newsalert/pdf/precautionary_principle_decision_making_under_uncertainty_FB18_en.pdf)  
<sup>11</sup> <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0136928>



*“There are major differences between the United States and Europe and other places in a philosophical basis by which risks for pesticides are evaluated. And in the European Union, the precautionary principle, which states that if we don’t understand fully the risk of using something, we should not use it until we have that greater understanding. Whereas in the United States, without the precautionary principle we say, well let’s take the risk and we’ll find out if it’s not working and readjust. And that’s a matter of law that the EPA is bound by.”*

**JAMES FRAZIER, PhD**  
Emeritus Professor of Entomology, Penn State,  
*The Pollinators*



# POOR NUTRITION



**MONOCULTURE FARMING** is simply planting a single crop on a specific field or orchard.

While efficient for planting and harvesting, this leads to a lack of diversity in the bees' diet because they are foraging from predominantly the same type of flower.



**HABITAT LOSS** can be a result of large scale monoculture farming, development for human settlement, conversion of land for resources extraction and climate change. Honey bees do best

with a diverse succession of flowering plants throughout a season. Honey bees will fly up to five miles to forage, but most native bees are solitary and many have a range of a few hundred feet (or less), so even small gardens, planters, window boxes, et cetera can be good sources of food and habitat for native bees. Changes in agriculture accelerated after World War II and farming has become much more simplified and chemically dependent on pesticides, including insecticides, herbicides, fungicides, fertilizers and growth regulators aiming for higher yields of crops and more efficiency in farming.



**CLIMATE CHANGE** can affect pollinators and plants alike by altering the natural cycle of coordination of when flowering plants and trees bloom and the availability of pollinators.



*“We can learn a good deal from bees about the health of the landscapes that we inhabit. And, sort of secondarily we can learn a good deal about the folly of setting up our agriculture in quite the way that we have. It looked so efficient and concentrate everything in the ways that we’ve done it. But that turns out to be a false efficiency. It is the cheapest way to produce pork or corn or whatever else. But that cheapness comes at a high price. And that price is the loss of the agricultural diversity, redundancy, resiliency that is really beyond price. You know, it’s the thing that we’ve built up over 10,000 years of agriculture. And now in a kind of hundred years of industrialization, we’ve managed to get rid of most of it.”*

**BILL McKIBBEN, Author & Environmentalist, *The Pollinators***

# DISCUSSION QUESTIONS



- *In your own words, describe the three main causes of the dangers to honey bees: poor nutrition, parasites and pesticides. How are they interrelated?*
- *What are some other causes of pollinator decline?*
- *How does pollinator decline contribute to a decrease in biodiversity?*
- *What does the complexity of the dangers to bee health suggest to you about potential solutions?*
- *What do you think has prevented the adoption of the “precautionary principle” and other protective measures in the US?*

## Next Steps

- Create pollinator gardens and habitats to attract bees at home and in public spaces like schools. Even a window box can make a difference.
- Allow dandelions, clover and other flowering plants to grow in your lawn and mow less often to allow those flowering plants to bloom.
- Do not use pesticides and herbicides in your gardens or lawns.
- Plant flowering trees and shrubs that benefit pollinators.
- Don't harm the bees you encounter in the world – these foragers are just doing their bee business, pollinating and making honey and food.
- Advocate for regenerative, no-till and sustainable farming practices to restore soil quality.
- Support local, state or national legislation to protect pollinators.

### Colony Collapse Disorder (CCD)

CCD is a specific phenomenon that occurs when the majority of worker bees in a colony leave the hive and disappear, leaving the queen behind with only a few workers. This affliction first occurred in 2005 and was documented in high numbers during the winter of 2006-2007. CCD still occurs from time to time.<sup>12</sup> The colony deaths and decline of honey bees documented in

***The Pollinators*** is not limited to CCD.

<sup>12</sup> <https://www.epa.gov/pollinator-protection/colony-collapse-disorder>

# FOOD SECURITY AND THE ECONOMY OF BEEKEEPING

## Focus Question:

- Why are bees necessary for our food security?
- How do managed honey bees fit into our food system?
- What challenging barriers must those who rely upon the honey bee for their livelihood overcome? (eg: farmers, beekeepers, chefs)

## Did you know...



*Approximately 2 million beehives are moved from all over the country to California every year for the almond pollination. That's nearly 100% of the commercially managed bees in the U.S.*



*California's Central Valley has about a million acres of almonds that require 2 million beehives – 2 hives per acre – for pollination.*



*Pollinators increase our nation's crop values by more than \$20 billion annually.*

Honey bees are the most economically valuable pollinator worldwide, but native bee species are also essential for healthy ecosystems and pollination.



*“It’s so important what happens in California because it sets up the table for the rest of the year. Almonds are the earliest crop in the spring and after this, most of the bees will go either into a secondary pollination or into a breeding program to replace the old queens and to make up for the previous year’s death losses.”*

**BRET ADEE**, Adee Honey Farms,  
*The Pollinators*



# DISCUSSION QUESTIONS



- *How do you imagine your diet would change if pollinator populations continue to decline?*
- *In your opinion, what would be the most effective incentives to encourage farmers to adopt practices that would protect bees and other pollinators?*
- *When you buy food, what factors do you take into account as you decide what to buy?*
- *In the final scene in the documentary, Jonathan Lundgren says, “You need to focus back on reinventing how we produce our food to begin with.” What might that reinvention look like?*

## Next Steps

- Join or start a school/community [beekeeping club](#).
- Become a beekeeper.
- Participate in citizen science to help [track](#) and [nurture](#) pollinator populations.
- Plant [top pollinating plants](#) in your garden.
- Work to get your city certified as a [Bee City USA](#) or college as a [BeeCampus USA](#).



*“A better way for creating a sustainable agricultural system is starting to come not from the regulatory agencies, not from the top down, but from the bottom up. From the consumers demanding organic food, from places like Costco and Walmart providing organic food because they’re big enough that they need contracts with growers, they say, “We need 500 acres of organic tomato sauce, can you do it?” And then it’s like you’re not swimming upstream anymore. It’s capitalism and you’re using that economic driver to change the farming system. That’s where the future is in my opinion.”*

**SUSAN KEGLEY, PhD**  
Principal and CEO of Pesticide  
Research Institute, *The Pollinators*

# REGENERATIVE FARMING AND ORGANIC PRACTICES

## Focus Question:

- Why does regenerative farming help honey bees and other pollinators?
- How do the farmers featured in ***The Pollinators*** inform your understanding of regenerative farming? What ideas stand out?
- What can each of us do as consumers, gardeners, and lovers of food to support the restoration of honey bees and other native pollinators?

We rely on healthy soil for 95% of what we grow.<sup>13</sup> We learn in ***The Pollinators*** that healthy soil is not only the foundation for our food supply, but necessary for our climate and for sustaining honey bees and other pollinators.

## Revisit the Principles of Regenerative Farming

- Do not disturb the soil - minimize tillage.
- Always have a living root in the ground.
- Diversity of plants is important and more diversity is better than less.
- Integrate crop and livestock production.

<sup>13</sup> <http://www.fao.org/soils-2015/news/news-detail/en/c/277682/>



*“We’ve evolved a system [of farming] that’s efficient from use of land in terms of amount of food that can be produced on it, but it’s not a sustainable system. It’s not healthy for the soil, it’s not healthy for the product that’s produced in terms of its nutrition or other properties, and it’s not healthy for the environment as a whole.”*

**JAMES FRAZIER, PhD**  
Emeritus Professor of Entomology, Penn State,  
*The Pollinators*

# DISCUSSION QUESTIONS



- *What is the relationship between soil and pollinator health?*
- *What stood out to you as the most important changes to our agricultural practices that would bring about a more sustainable food system?*
- *What is the role of biodiversity in creating more sustainable agricultural practices?*

## Next Steps

- Buy local and U.S. honey.
- Buy organic food.
- Support local farmers and beekeepers through CSA (community supported agriculture) and [farmers markets](#).
- Be aware of where your food comes from – ask questions and buy and eat ‘ugly’ fruit.





A firefighter in full protective gear, including a helmet with a face shield and a heavy jacket, is shown in profile, spraying a fire at night. The fire is bright orange and yellow, with thick black smoke rising from it. The firefighter is holding a hose and nozzle, and the fire is located in front of a building with windows. The scene is illuminated by the fire and the firefighter's gear.

## IN THE CLASSROOM

*“Fruit growing without chemicals? I would be happy because it is a major expense for me. That and labor are my two major expenses... But we have to use it to get the fruit that people want to buy.”*

**NEIL HINISH, Fruit Grower & Owner,  
Hinish Orchard, *The Pollinators***

# FOSTERING WONDER

Bringing *The Pollinators* into classroom settings engages students in the science, economic importance, and environmental issues interwoven throughout the documentary film.



## Revisiting Clips from *The Pollinators*

### Suggested Clips from the 92 Minute version

- Clip One: “Food Security” (7:50 - 21:16, runtime: 13:26)
- Clip Two: “Understanding Monocultures” (44:21 - 54:27, runtime: 10:06)
- Clip Three: “Regenerative Agriculture” (54:28 - 1:09:05, runtime: 14:37)
- Clip Four: “Consumer Solutions” (1:19:47 - 1:31:29, runtime: 11:42)

### Suggested Clips from the 56 Minute version

- Clip One: “Food Security” (4:54 - 15:12, runtime: 10:18)
- Clip Two: “Understanding Monocultures” (29:00 - 35:53, runtime: 5:53)
- Clip Three: “Regenerative Agriculture” (35:54 - 45:11, runtime: 9:17)
- Clip Four: “Consumer Solutions” (50:05 - 56:04, runtime: 5:59)



## Consider incorporating one or more of these ideas into your units of study:



**Connect with a local beekeeping association** to organize a beekeeping field trip. Start a beekeeping club in your school through the [American Beekeeping Federation](#) or the [American Bee Journal](#).



**Explore the science of pesticides** to understand their chemical properties, how their effects are measured and how decisions are made about which are acceptable to use in our agricultural systems.



**Understand the role of pollinators in our diets.** Use a [list of foods](#) to cook with or plan meals that are pollinated by specific creatures, or that are particularly at risk as the populations of pollinators decline.



**Apply for a grant** through [The Bee Cause Project](#), or the [Whole Kids Foundation](#) to support a beehive, bee curriculum programming or a pollinator garden at your school.



**Participate in a citizen science program** to track and study pollinator populations around the country. Use these resources to kick off this project:

- <https://xerces.org/community-science>
- <https://pollinatorlive.pwnet.org/teacher/citizen.php>
- <https://scistarter.org/the-great-sunflower-project>



**Be(e) creative,** have students use art supplies to make posters, sculptures, memes or other artistic expressions to share what they've learned about bees, the process of pollination, honey creation or the importance of pollinators, and share their work with other classes or the community.

### Further lesson ideas and exercises for classrooms are available at:

- <https://www.thebeecause.org/resources/>
- <https://xerces.org/education>
- <https://www.wholekidsfoundation.org/bee-activities>
- <https://www.beegirl.org/kidsandbees>



# TAKE ACTION

## SAVE THE BEES

*“Bees are just one of those things that benefit all the way around. You know, you can see it if you watch it. And then you can see it quantified when scientists watch it. I mean we know bees are the right thing to have on the landscape. We know it’s a win - win - win. And we really get a nice pleasure out of it when other people realize it too.”*

**BRET ADEE, Adee Honey Farms, *The Pollinators***

Go to [Take Action](#) page on [The Pollinators website](#) and explore resources on these topics:

-  Organizations Working for Pollinator Health & Education
-  Organic, Regenerative and Sustainable Agriculture Organizations
-  Farmers Market Guide
-  Politics and Policy
-  Report a Swarm & Bee Rescue



# WHO'S WHO IN *THE POLLINATORS*



**Bret Adee:** part of a family-owned beekeeping operation, [Adee Honey Farms](#), the biggest beekeeping business in the U.S., with locations in California, South Dakota, and Nebraska.



**Jack Algieri:** farm director at the [Stone Barns Center for Food and Agriculture](#) in Westchester County, New York, a nonprofit farm and learning center dedicated to the promotion of sustainable agriculture.



**Jeff Anderson:** beekeeper who owns California-Minnesota Honey Farms. He was lead plaintiff in a lawsuit against the Environmental Protection Agency's approval of a neonicotinoid pesticide especially deadly to bees.



**Alan Ard:** owner of [Ard's Farm](#) in Lewisburg, Pennsylvania. He is a strong advocate for no-till farming which creates healthy soil.



**Dan Barber:** chef and co-owner of [Blue Hill at Stone Barns](#), Westchester County, New York one of the finest farm-to-table restaurants in the world and is affiliated with the [Stone Barns Center for Food and Agriculture](#).



**Leigh-Kathryn Bonner:** founder and CEO of [Bee Downtown](#), an urban beekeeping business in Durham, North Carolina, and Atlanta, Georgia. Named one of Forbes "30 Under 30 Social Entrepreneurs" in 2019.



**Zac Browning:** fourth generation beekeeper based in North Dakota, co-owner of [Browning's Honey Company](#), past president of the [American Beekeeping Federation](#), currently on the steering committee of [The Bee & Butterfly Habitat Fund](#).



**Glenn Card:** third generation beekeeper, Vice President of [Merrimack Valley Apiaries](#), a multigenerational family operation with locations in Massachusetts, New York and Louisiana.



**Steve Clarke:** sixth generation fruit grower, owner of [Prospect Hill Orchards](#) in Milton, New York. He and his family use Integrated Pest Management (IPM), a low chemical spray method that is less hazardous to honey bees.



**William and Lucas Criswell:** father and son farmers who own Criswell Acres in Pennsylvania's Susquehanna Valley. Advocates for [no-till](#) farming to restore the soil and attract a variety of pollinators, especially bees.



**James L. Frazier, PhD:** Professor Emeritus of [Entomology at Penn State](#). He is an expert on the impact of pesticides on bees.



**Maryann Frazier:** retired Senior Extension Associate of [Entomology at Penn State](#) and an expert on colony collapse disorder and the effect of pesticides on the bee population.



**Christina Grozinger, PhD:** Distinguished Professor of Entomology and Director of the [Center for Pollinator Research](#) at Penn State. She is internationally recognized for her work on the social behavior and health of bees.



**Dave Hackenberg:** founder of [Hackenberg Apiaries](#) in Pennsylvania. Served as president of the Pennsylvania State Beekeepers Association and the American Beekeeping Federation. A member of the National Honey Board and co-chair of the Honey Bee Health Advisory Board.



**Davey Hackenberg:** owner of [Hackenberg Apiaries](#) and along with his father, does commercial pollination and honey production in six states.



**Bob Harvey:** beekeeper in Florida, owner of Bob's Bees. Bob was an expert on crop pollination for more than 40 years, specializing in Maine blueberries and California almonds.



**Neil Hinish:** operates Hinish Orchard, a family fruit growing business in Central Pennsylvania. He grows many varieties of apples and uses carefully applied Integrated Pest Management (IPM) techniques to control pests and disease.





**Susan E. Kegley, PhD:** Principal and CEO of Pesticide Research Institute. Formerly Senior Scientist at the Pesticide Action Network. A specialist in environmental, organic, inorganic and analytic chemistry, she taught at University of California, Berkeley. Susan is also a beekeeper and owns an organic farm called [Bees N Blooms](#) with her husband.



**Jonathan Lundgren, PhD:** formerly with the US Department of Agriculture, he left his job with the government when his data on pesticides and pollinators was suppressed. He founded [Blue Dasher Farm](#), a regenerative farm, and [Ecdysis Foundation](#), a nonprofit independent bee research lab in South Dakota.



**Bill McKibben:** a noted environmental activist, author and co-founder of [350.org](#), the grassroots climate change movement. McKibben's writings about the impact of people on the natural world are cornerstones of the environmental movement.



**Jeffery Pettis, PhD:** entomologist and former research leader at the [Beltsville Bee Laboratory](#) of the US Department of Agriculture's Agricultural Research Service ([USDA ARS](#)). A leader in the study of colony collapse disorder and an independent bee researcher.



**Samuel Ramsey, PhD:** entomologist with the [vanEngelsdorp Bee Lab at the University of Maryland](#), College Park. Dr. Ramsey studies the impact of honey bee parasites on bee colony survival rates. His extensive research has led to the rethinking of the control of the Varroa destructor mite.



# CHECKLIST FOR PLANNING YOUR EVENT

Access the film here

## ★ Six to Eight Weeks Prior

\_\_\_\_\_ Set a time, date and location.

- For an in-person screening, confirm a location that is accessible to all including for hearing and sight impaired participants.
- For a virtual screening, [contact our educational distributor](#) for help in setting up an event to suit your needs or [contact \*The Pollinators\* filmmaking team](#) with any questions.
- [Social Media Assets](#) to help spread the word.

\_\_\_\_\_ Brainstorm and prioritize a list of community organizations to partner with and help with outreach.

\_\_\_\_\_ Build a guest list, confirm community partners, find speakers for any post screening discussion and begin compiling relevant local resources.

\_\_\_\_\_ Secure your screening media and permissions.

\_\_\_\_\_ Review the film resources and decide on the best format and agenda for your event.

- The 92-minute film
- The 56-minute educational cut (for ease of classroom use)
- Short film clips associated with specific topics in this guide

## ★ One Month Prior

\_\_\_\_\_ Send out an invitation with time, date, location and description of the film and the post-screening agenda.

\_\_\_\_\_ Coordinate with community partners to make sure everyone is familiar with the film and can prepare and participate fully in the agenda.

## ★ Day(s) Before

\_\_\_\_\_ Send reminders to speakers and to guests. Post to your organization's social media and tag [@pollinatorsfilm](#)

\_\_\_\_\_ Re-watch the film and/or clips, review the guide and your agenda, and test your AV equipment on-site.

\_\_\_\_\_ Copy and assemble any handouts and local resources.

## ★ Day of Screening

\_\_\_\_\_ Set up at least one hour prior. This allows for enough time if you need to arrange the in-person/virtual room, test the equipment, greet guests and panelists, and review your agenda.

\_\_\_\_\_ Spread the word using your social channels and tag us:

**Twitter** [@pollinatorsfilm](#) | **Instagram** [@pollinatorsfilm](#) | **Facebook** [@thepollinatorsfilm](#)









# The Pollinators

A night scene in a field. A tractor with a large illuminated sign is in the center, and a person in a white protective suit stands to the right. The scene is lit with warm, yellow lights, and a bright light source is visible in the dark sky above.

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Facebook: [@thepollinatorsfilm](https://www.facebook.com/thepollinatorsfilm)