



The Good, the Bad, the Impact! Students will learn all about pollinators, their importance in California agriculture and their contribution to sustaining our environment. They will also learn about invaders! The invasive species that impact our statewide agriculture, how to recognize them and learn ways to prevent them!

HONEY BEE FACTS

1. Honey Bees can fly up to 15 miles per hour
2. Honey Bees NEVER sleep
3. Bees are responsible for 80% of pollination that occurs
4. In California, honey bees live in colonies of around 50,000 bees
5. There are 3 types of bees in a colony: drones, workers, and a queen
6. The queen lays around 2,000 eggs per day
7. Honey bees have to visit 2 million flowers to make one pound of honey

POLLINATORS, INVASIVE SPECIES, BIODIVERSITY, & CLIMATE CHANGE

- **POLLINATION** is a very important part of the life cycle of plants. Insects, birds, bees, water, and wind move **pollen** from one part of a flower to another flower, which causes the **plants** to make seeds and reproduce. Many crops you consume need pollinators to grow: almonds, apples, peaches, blueberries, grapes, etc.
- **POLLINATORS** are essential to agriculture because they help maintain our ecosystems. There are about 200,000 species of animals that pollinate; some examples include Honey Bees, Hummingbirds, Ladybugs, Beetles, Butterflies and Bats.
- **INVASIVE SPECIES** are insects, plants, animals, and diseases that are moved into an ecosystem where they have not been previously found. Since they often do not have natural enemies to keep them from spreading, they end up killing native plants and animals. As a result, these invasive species can destroy our agriculture crops and livestock.

- **VARROA MITE**, a tiny parasite that feeds on honey bees. They transfer from one bee to the next when bees are in close contact with each other, such as in a hive. If enough varroa mites infect a hive, they could kill all the honey bees in that hive. Without honey bees we could lose many of our California crops like: strawberries, cherries, berries, melons, kiwifruit, or pears.
*Activity: Sugar Shake Method
- **ASIAN CITRUS PSYLLID**, invasive pest that feeds on citrus leaves. They spread the huanglongbing disease that causes bitter fruit and kills citrus trees, such as orange, lemon, lime, and grapefruit. This disease is not harmful to humans, but it is fatal to our citrus trees and there is no cure. Although it is only the size of a sesame seed, it slowly kills the tree and stops it from producing fruit. Just one sick tree could potentially set off a devastating chain of events. Especially in California, because we grow 80% of the fresh oranges sold in the U.S.!
- **How can you help?** Do not bring food, plants, animals, or firewood home from other states or countries; only purchase local plants; and wipe off fruit and remove leaves and stems.
- **BIODIVERSITY** is the variety of animals and plants found on Earth. There are thousands of plant and animal species and they are all continuously evolving and adapting to the environment around them. Healthy ecosystems require a vast assortment of plant and animal life, from soil microbes to top level predators like bears and wolves. If one or more species is removed from their environment, no longer serving its niche, it can harm the ecosystem. Introducing invasive species into a habitat can have similar results, because they can out-compete the native species for food or territory.
- **CLIMATE CHANGE**, also called **global warming**, is the process of the Earth's climate gradually getting warmer. In addition to the Earth warming, rainfall patterns are changing, sea level is rising, and snow and ice are melting sooner in the spring - which reduces California's water supply. We need different climates to grow different crops, so if Earth continues to get warmer and we lose our water supply, some of our crops could be damaged or lost.

