

OPINIONS ABOUT Robot Bees

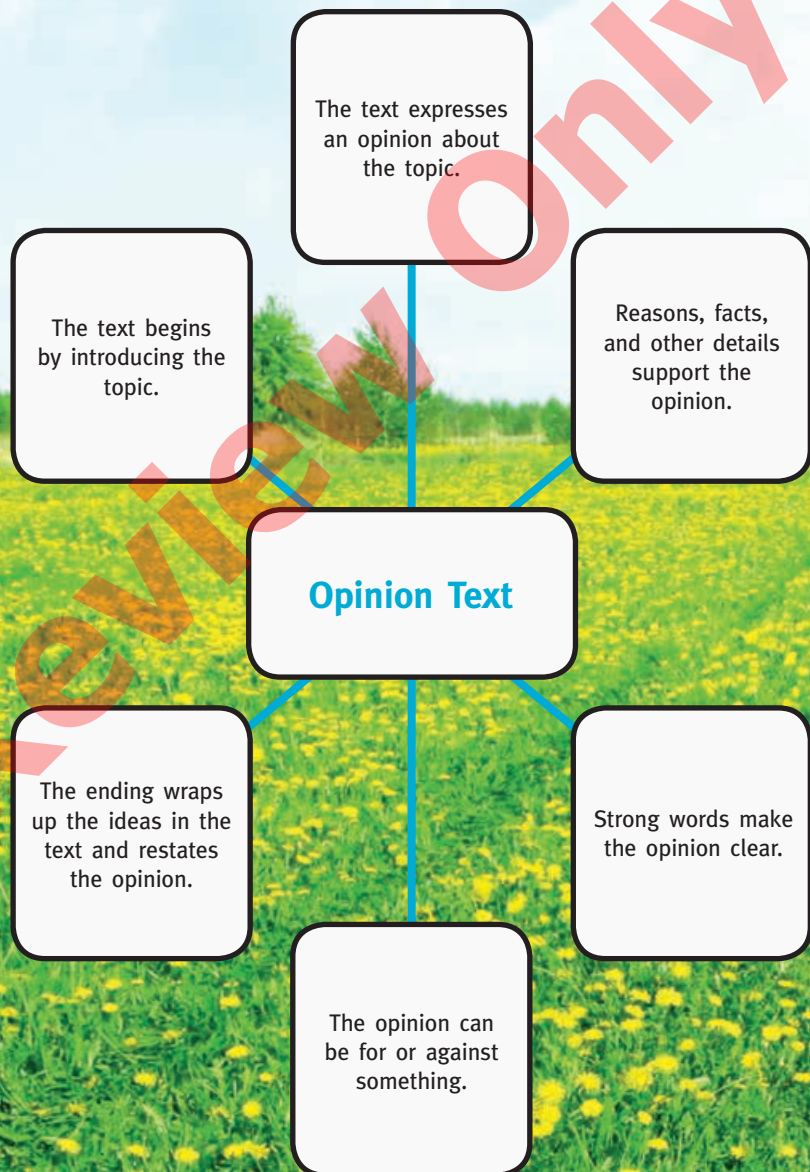
by Kimberly Feltes Taylor



**Can robot bees do
the work of real bees?**

Opinion Text

Look for the genre features noted below as you read this book. Use the features to help you understand the text.



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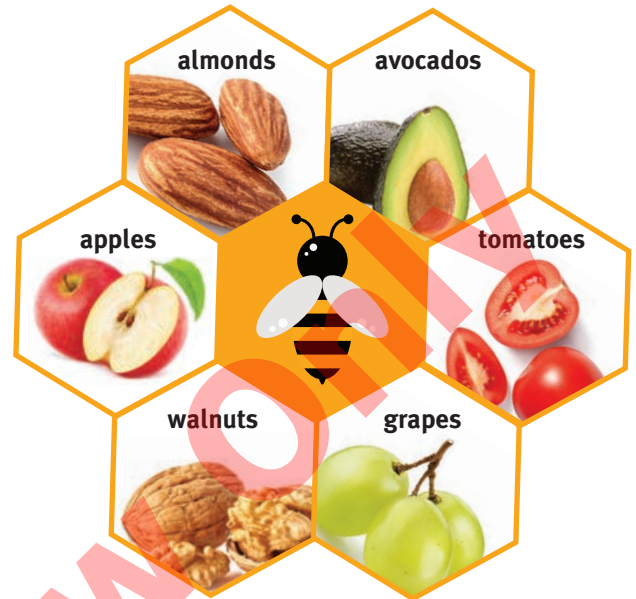
Bees Help Feed Us

For Review Only

Bees Help These Foods Grow

Picture an apple orchard in the spring. The apple trees are covered in sweet-smelling blossoms. Bees buzz around the orchard. They fly from flower to flower doing an important job. They spread **pollen** from one apple tree flower to the next. This process helps the flowers grow apples. Bees **pollinate** all types of fruit and vegetable plants. Bees are an important part of how food grows. Apples, almonds, avocados, grapes, tomatoes, and walnuts are just some of the food crops that rely on bees.

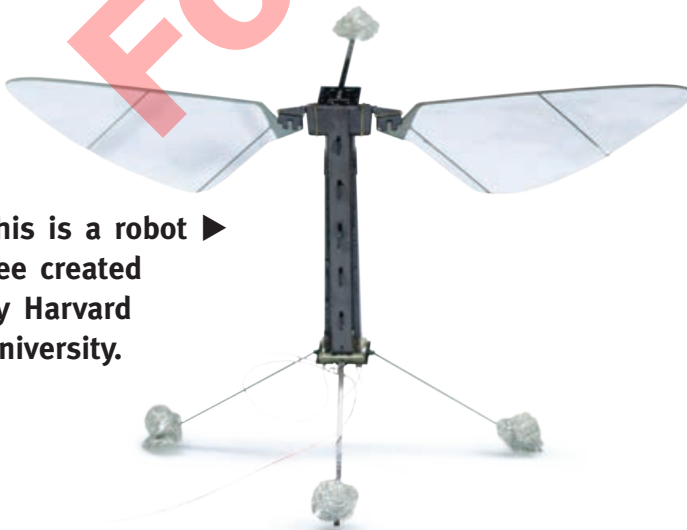
But bees are in trouble. They have been dying in large numbers, and scientists are trying to find out why. They hope they can save the bees.



If scientists cannot save them, many plants that rely on bees to pollinate them won't grow fruit. This means it will be difficult to grow many of the foods that people eat.

Researchers are working on a new way to pollinate plants and trees. They are building robot bees. Are these electronic insects the answer to saving food crops? Keep reading to form your own opinion on the topic.

This is a robot
bee created
by Harvard
University.





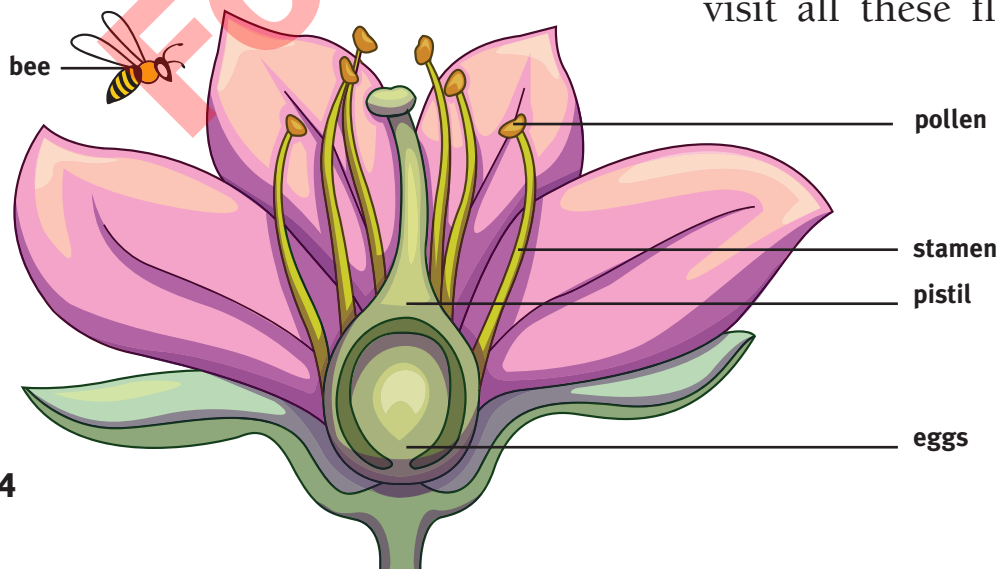
The Importance of Bees

BEES AND POLLINATION

All fruit grows from a flower. To grow fruit, most flowers need pollen from another tree or flower. This is where bees come in. Bees are insects that collect nectar. Nectar is a sweet liquid that flowers make. Bees fly from flower to flower drinking in nectar.

While the bee collects nectar on a flower, some of the pollen on the flower's **stamen** sticks to the bee. Then the bee flies to the next flower for more nectar. When the bee touches this next flower, the pollen rubs off on that flower's **pistil**. If the flower is pollinated, it will grow a fruit. One study shows that a bee can visit more than 1,000 flowers in a day. A bee may even travel up to 97 kilometers (60 miles) to visit all these flowers.

Bee Pollination





TYPES OF BEES

The honey bee is raised by a beekeeper. People have been working with honey bees for thousands of years. Beekeepers provide a home—called a hive—for the honey bees. Beekeepers raise honey bees for the honey they make. Beekeepers also bring their honey bees to farms so the bees can pollinate crops. The National Resources Defense Council (NRDC) estimates that honey bees pollinate more than \$15 billion worth of crops each year.

There are about 20,000 types of wild bees around the world. They buzz around parks and backyards.

Some live alone in the bark of trees. Like honey bees, wild bees pollinate flowers as they collect nectar. Wild bees pollinate many of the wildflowers that grow around the world.



honey bee

- stripes
- medium size
- lives in a hive
- makes lots of honey
- slender body
- less hairy



bumblebee

- blocks of color
- small to large in size
- lives in the wild
- makes only a little honey
- thick body
- more hairy

BEES IN DANGER

Since 2006, adult worker honey bees have been dying in large numbers. Without worker bees, a honey bee colony cannot survive. This is because worker bees bring food (in the form of nectar and pollen) back to the colony.

Bee Informed is an organization that **monitors** honey bees in the United States. Its study shows that almost half of honey bee colonies were lost between April 2015 and April 2016. This rate is much higher than in years before. Other countries have also seen a large decline in honey bees.

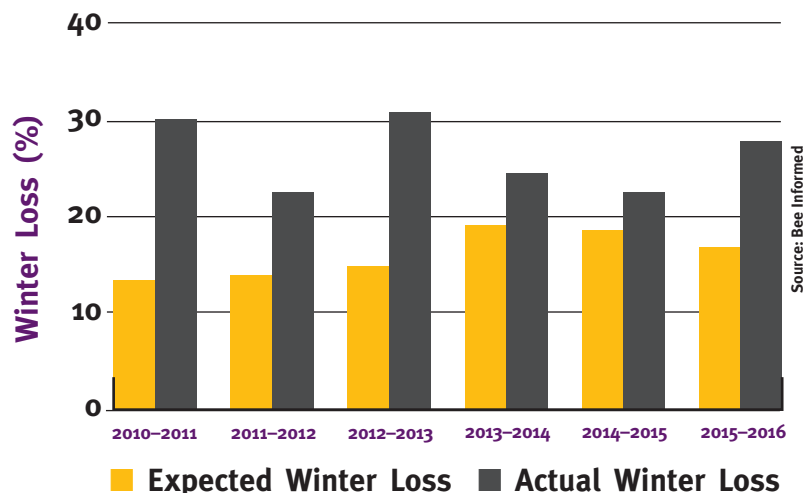
U.S. Honey Bee Colony Losses

The Bee Informed organization keeps track of how many honey bee colonies die during the winter and summer months. This graph shows how many colonies were lost during the winter months. Colony losses were higher than beekeepers expected.



These wild bees are in danger of dying out.

Wild bees are harder to track, but the Center for Biological Diversity has done studies. They found that nearly 350 types of wild bees in the United States are at risk of dying out. The United Nations warns that many types of wild bees are at risk of dying out worldwide.



PESTICIDES

Scientists have found a few reasons behind bees dying in large numbers. One reason is pesticides. These chemicals kill insects that damage crops. Many farmers spray pesticides to protect their crops. But pesticides are harmful to helpful insects like bees.

As bees pollinate the crops, they come into contact with the pesticides. The pesticides kill the bees. Both honey bees and wild bees are dying because of pesticides.

A farmer sprays crops with pesticides.

MITES

Another reason for bee decline is mites. A mite is a tiny cousin of the spider. There are different types of mites. One type is the Varroa mite. This type of mite feeds on the blood of honey bees. The honey bee becomes weak and dies. Mites can also pass deadly diseases to the honey bee.





- ▲ Natural land has many places bees can live in and find nectar.
A city has few places bees can live in and find nectar.

LOSS OF HABITAT

Another reason wild bees are dying is the loss of habitat. A habitat is the natural home of a living thing. Wild bees can live in most places with flowering plants such as forests or grasslands. They build nests in trees. They even dig homes in the ground.

As the human population grows each year, more areas are turned into towns and cities. Forests are torn down to build homes and stores. Grasslands are covered with roads and buildings. When this happens, the wild bees that lived there lose their habitat. They have nowhere to live and no flowers to get food from. This causes bees to die.



The Bee Colony

Some types of bees live together in communities called colonies. Each colony has a queen bee. She is the leader of the group. Most of the other bees in a colony are worker bees. They find nectar for the queen bee and the baby bees. When bees lose their habitat, they may have trouble finding nectar to take back to the colony. As a result, the colony suffers. They may make less honey to eat during the winter. Then the bees can't survive.

IMPACT OF BEE LOSS

Bees are so important that losing them affects everyone. One major impact is rising costs. Over the last six years, the bee industry has spent \$2 billion to replace ten million hives. These costs are passed on to people buying nuts, honey, fruits, and vegetables.

Food crops will also be impacted if bees continue to die off. According to an executive director at the United Nations, one hundred different types of crops provide most of the world's food. Over seventy of those crops are pollinated by bees. People rely on these crops to get vitamins A, C, and E. Bees pollinate crops that provide these vitamins. If all the bees die, these crops will die out. Then people would have a harder time getting all the vitamins they need.

Bees also pollinate many of the plants that animals eat. For example, some of the plants that cows eat are pollinated by bees. If bees die out, then these plants will also die out. This impacts cows and other animals that eat those plants. Also, animals such as spiders and birds eat bees. Those animals will lose a food source if bees die out.

Pollinating by Hand



In China, some areas have lost many bees. Farmers in these areas are now pollinating their crops by hand, using a brush. Each farmer pollinates about 3,000 flowers per day. In contrast, one colony of bees can pollinate 300 million flowers per day, reports one environmental organization.

