

# THE SWEET CONNECTION

## CONCEPT

Students will use maps to find what crops are dominant in areas where honey bees are raised and discuss possible correlations.

## STEP-BY-STEP INSTRUCTIONS

1. Write the word “partnership” on the chalkboard, and ask for definitions. Have students name some famous partners. (Batman and Robin, peanut butter and jelly, etc.) What makes them partners? What does each partner contribute? Is one partner more important than the other? Give students time to describe partnerships in which they have participated—on sports teams, scouting activities, class projects, etc.
2. Ask students to name some partnerships in nature (worms and soil, cattle and egrets). Focus attention on the partnership between bees and flowers.
3. Share background material provided with the lesson. Demonstrate pollination by drawing the outline of two large flowers on the chalkboard. Fill in one of the flowers with colored chalk. Roll a cotton ball around in the colored chalk, then rub the cotton ball on the other flower. Explain that the fine hairs on the bee’s legs and body act like the fine fibers on the cotton ball to pick up pollen from one flower and deposit it on another as it moves from flower to flower gathering nectar.

## GRADE LEVEL

4-6

## NATIONAL GEOGRAPHIC THEMES

Location, Place,  
Human-environment  
interaction, Regions

## SUBJECTS

Geography, Science,  
Social Studies

## MATERIALS

### NEEDED

Large wall map of the  
US, colored chalk,  
cotton balls, two or  
three small jars of  
honey (different  
brands)



## VOCABULARY

partnership—A relationship between individuals or groups that is characterized by mutual cooperation and responsibility, as for the achievement of a specified goal.

apiculture—The raising and care of bees for commercial or agricultural purposes.

pollination—To transfer pollen from an anther to the stigma of a flower.

## RESOURCES

National Honey Board  
<http://www.nhb.org/>

National Agricultural  
Statistics Kids Page  
<http://www.usda.gov/nass/nasskids/nasskids.htm>

4. Ask students where we get the honey we buy in stores. Does it grow on honey farms? Bring three or four jars of honey to class and have students look at the labels on the jars to find where the honey was produced. Based on their findings, have students locate the honey's origins on a US map.
5. Have students go to the library or the internet to research where honey is produced in the US. (See list of resources for additional information.) Students may work in groups or individually.
6. As a class, have students mark the top ten honey-producing states on a US map. Is honey produced in your state? Where does your state rank nationally?
7. Tell students they will form partnerships to research the top honey-producing states and find out why more honey is produced in those states than anywhere else. Have students start by brainstorming to find what conditions would be necessary. What kind of climate is best for bees? What kinds of flowers provide the nectar that produces the best honey? What flower helps bees produce the most honey?
8. Hand out student worksheets for students to use as study guides.
9. Have students report their findings. On the chalkboard, have students write the climate conditions in each state where honey is produced and the top crops. Have students look for patterns and see if they can draw conclusions about what climates are best for bees and what plants provide them with the best food.

## BACKGROUND

The honeybees that produce most of the honey we eat are not native to North America. Early European settlers brought them here in the 1600s so they would have a steady supply of the sweetener they were accustomed to eating back home.

The Aztecs and Mayans in Mexico and Central America ate honey from bees native to America, but those bees did not produce as much honey as the European bees.

The natives on the east coast sweetened their food with maple syrup, the sap they found in maple trees. These people called the European honeybees “white man’s flies.”

Bees must have the help of other bees to make honey. One bee would have to make 154 trips, carrying tiny amounts of nectar from the flower to the hive, just to make one teaspoon full of honey. If one bee had to make a pound of honey all by herself, it would take her 160,000 hours and 80,000 trips. That would be like flying around the world three times. One worker bee actually only makes 1/12 a teaspoon of honey in her lifetime. But working together, a colony of bees may bring in as much as 40 pounds of nectar in a day and make 200-300 pounds of honey in a year.

Flowers need bees’ help, too. Bees have fine hairs on their legs and bodies. They collect pollen on these fine hairs as they fly in and around flowering plants, sipping nectar into their honey stomachs. They pass pollen from leg to leg and pack it into pollen baskets located on their hind legs. Bees need the nectar to produce honey, and flowers need the pollen the bees bring from other plants so they can produce seeds. Bees also use pollen as an alternate food source.

By being good partners to flowers, honeybees also act as very good partners for farmers. Most of our major food crops start as flowering plants that rely on the honeybee and other insects for

pollination. Through pollination honeybees help to produce larger crops. They increase the yield of fruit, vegetables and other crops by 25 to 30 percent. If not for the honeybee, our food supply would decline. One-third of the food eaten in the US depends on pollination.

### **EXTENDED ACTIVITIES**

1. Invite a beekeeper to visit your class and bring beekeeping equipment to answer students' questions about beekeeping.
2. Have students write stories about the early European settlers who carried bees over on ships to this continent.
3. Have students imagine they are moving someplace far away like the settlers who came here from Europe. The settlers liked honey so much they were willing to carry bee hives with them on a long and crowded ocean voyage. Ask students what food they like so much they would go to great trouble to take it with them across the ocean. Have students write stories about their voyages with their favorite food source.
4. Have a water relay to help students understand how much work it takes for a bee to gather enough nectar to make honey. Students should use teaspoons or eye droppers to transfer one cup of water from one container to another one some distance away. Use a stop watch to keep accurate time. To add suspense, play a recording of Rimski-Korsakov's "Flight of the Bumblebee" as students race.

Partners \_\_\_\_\_

# THE SWEET CONNECTION

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Honey-producing state \_\_\_\_\_

Climate \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Top five crops

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_