

## **Support Materials for Bees 360: Visit to A Beekeeper**

Objective: The learner will describe the steps in the process of making honey.

### Background Reading:

Bees are important to humans for two main reasons: they enable flowering plants to reproduce by moving pollen from one flower to another, and they make honey that we enjoy! Beekeepers maintain honeybee colonies in man-made hives and collect the excess honey they make. Beekeeping by humans is known as apiculture and the location where bees are kept is called an apiary.

Beekeeping is one of the oldest forms of food production. People have kept bees for thousands of years, and the practice was well-known in ancient Greece, China, and Egypt. Pots of honey have even been found in the tombs of Egyptian pharaohs. About 200 years ago, people began to use moveable combs so that honey could be harvested without destroying the entire colony. Today, large commercial beekeeping businesses harvest and sell honey for profit, while some people keep bees as a hobby.

Humans may maintain the hives, but it is bees who make the honey. Worker bees visit flowers and collect nectar from flowers, usually within a radius of about 4-5 miles. A single honey bee may visit up to 1000 flowers per day. The bees store the nectar in a special pouch called a honey stomach, then bring the nectar back to their colony. There, other bees will help to chew up and regurgitate the nectar, mixing it with enzymes in bees' mouths. Then the nectar is deposited in the hexagonal cells of the beehive. Young worker bees fan their wings over the nectar to remove water content and dry it so that the nectar is thickened into honey. Eventually the water content is reduced to about 17%. When it is the right consistency, bees cap the cells with wax to protect the honey and keep it clean.

The honey that bees make is the energy source for the working bees. They also store honey for food during the winter when nectar is not available to gather. A large colony can consume 100-200 pounds of honey in a year. But healthy bees make more honey than they need. Although beekeepers leave most of the honey in the hive, they collect the excess that the bees do not need. Wearing protective clothing, the beekeeper removes the frames from the hive and uncaps the honeycomb cells, then spins the frames at high speed in an extractor, which forces the honey out.

A worker bee lives for about 6 weeks and makes about 1/12 teaspoon of honey during its short, busy lifetime. To produce a pound of honey, it takes about 556 foraging honey bees visiting two million flowers and flying 55,000 miles! Honey is the only human food made by an insect, and eaten by both the insect and humans.

Learn more at <http://idahoptv.org/sciencetrek/topics/bees/facts.cfm>

### Discussion Questions

What are the steps that bees go through to make honey?

How does the process of making honey require teamwork and organization on the part of the bees?

What are the steps the beekeeper goes through to make honey?

What is unique about honey as a human food?

Why are large numbers of bees so important in the production of honey?