TOEFL listening lecture 1

Narrator
Listen to part of a lecture in biology class.

Prof: You've been reading about animal behavior. Today we'll discuss one of the most astonishing behaviors in the animal world: dancing bees. Did you know that bees can dance? Well, neither did scientists, until the 1960s. That's when a German scientist, named, uh, Karl von Frisch, noticed something truly remarkable. As he was observing honeybees, he noticed that some of the bees, which he called scout bees, flew out of the hive to look for food. When a scout found a site where there was food, it flew back to the beehive and started dancing. This dance somehow told the other honeybees where the food was, because after the dance, the bees... [false start] some of the bees flew from the hive straight to the site of the food. Von Frisch called the bees that collect the food forager bees. He thought the scout bee's dance told the forager bees three things -- first, the smell of the food it had found; second, which direction to fly to reach the food; and third, the distance of the food site from the beehive. Von Frisch won the 1973 Nobel Prize for this discovery, but many scientists were skeptical of his theory. They didn't believe it was the dance that led the forager bees to food. Instead, they thought it might be, oh, the smell of the food on the dancing bee, or maybe that they just followed the scout back to the food site. Well, very recently, some British scientists used a new type of radar to prove that von Frisch's theory was indeed correct. It is the dance that communicates this information to other bees.

The British researchers found that scout bees perform two types of dances. If the food is near the hive, say, oh, about 50 or 60 meters away, the scout flies in a round pattern, like a circle. This tells the location, but not the direction, of the food site. If the site is farther away, the scout does what's called a waggle dance. It flies in a pattern of ovals and vertical lines. The speed of the waggle dance tells other bees how far away the food site is. The slower the dance, the farther away the food. If the scout flies in a vertical line up the side of the beehive, it's telling the foragers to fly directly toward the sun. If the scout flies vertically down the hive, it's saying, "fly away from the sun." Up is toward, down is away. If the scout flies at an angle to the hive, it's telling the foragers to fly neither toward nor away from the sun, but in between. The bees have a special internal mechanism to know which angle they should fly, based on the sun, the hive and the food site. They can also measure the distance they fly by recording the motion of things they see as they fly past.

Now, um, one problem with von Frisch's theory had been this: It seems to take the forager bees a long time to reach the food site. That's why ... [false start] That's why scientists thought that perhaps it wasn't the waggle dance that led them there. For many years, scientists couldn't follow the foragers after they left the hive,. because they didn't have the technology. Just a few years ago, though, the British scientists solved this problem using a new type of radar. They were able to attach a, uh, small radio transmitter to forager bees -- I don't know how, but they did. This enabled them to follow the forager bees' flight after they left the hive. The radar showed that foragers, do, in fact, fly straight to the area of the food site. They don't follow the scout bee back to the site, because the scout goes into the hive after it finishes dancing. Well then, if the waggle dance does lead the foragers directly to the

food site, why does it take so long for them to find the actual food? The answer is that the waggle dance leads the foragers only to the general area of the food. It doesn't tell them the exact location of the flowers or plants that have the food. So the foragers have to spend a while flying around the area before they find the exact location of what they're looking for.

These answer keys refer to the audio file TOEFL_1_lecture.mp3

1. Which aspect of bee behavior does the professor mainly discuss?

(A) Reproduction
(B) Hibernation
(C) Organization
(D) Communication

2. Why does the professor mention radar?

(A) To explain how bees know which way to fly
(B) To show how a theory was proved correct
(C) To illustrate problems with the waggle dance
(D) To confirm the accuracy of the round dance

3. According to the professor, what does the waggle dance tell forager bees?

(A) The distance of the food site from the hive
(B) The exact location of the food at the site
(C) How much food they will find at the site
(D) The weather conditions at the food site

4. Which way should forager bees fly if a scout bee flies up the side of the beehive in a vertical line?

(A) toward the west
(B) between sun and moon
(C) toward the sun
(D) away from the sun

Narrator: Listen again to part of the passage and answer the following question(s).
(audio file *TOEFL_1_lecture_excerpt1.mp3*)

Prof: Just a few years ago, though, the British scientists solved this problem using a new type of radar. They were able to attach a, uh, small radio transmitter to forager bees -- I don't know how, but they did.

5. What does the professor imply when he says this: I don't know how, but they did.

(A) The scientists should have been more careful.
(B) It is difficult to put transmitters on bees.
(C) It is not a good idea to use radar with bees.
(D) He does not know how transmitters work.

6. What can be inferred about how forager bees find food?

(A) They rely solely on the information from the waggle dance.
(B) They rely completely upon their senses of sight and smell.
(C) They use the waggle dance to reach the area of the food.
(D) They use their senses to find the exact location of food.

