TOTAL ECLIPSE AT MIZZOU

THROUGH THE EYES OF A SCIENTIST

How will the eclipse affect insects?

Our Insect Scientist

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Does the eclipse confuse insects’ “clocks”?

People have noticed changes in the way insects act during other eclipses. Just like plants and animals, insects have a circadian rhythm, or 24-hour “internal clock,” that regulates their behavior. If the environment gives certain cues, insects behave in certain ways. As it turns dark, for example, crickets start to chirp; mosquitoes start to feed; honey bees move into the hive.

An eclipse may alter or confuse an insect’s behavioral clock. They may respond to the loss of sunlight by changing their behaviors. As the light returns, the insect will adjust back to their usual behaviors.

Dr. Barrett's research

Dr. Barrett and his students do research on the chemical ecology of insects, meaning how insects use their odor signals to communicate with each other and how they use the odor signals of other organisms, such as plants. Right now, they are trying to develop a chemical lure that will only attract a certain species of fruit fly that is a serious pest of ripening fruit. If successful, this lure could help growers pinpoint when and where they need to spray to kill the pest. This would help farmers limit damage to their crops and better target their use of pesticides.

Experiment #1

Here’s a simple experiment to test how insects might behave during an eclipse.

Hypothesis: Bees will reduce their foraging activity during the darkness of the eclipse.

1. First, figure out what time the total eclipse will occur in your area. Then you’ll begin your experiment one hour before this time, and two days before and on Aug. 21, and then again for two days afterwards.

2. Select a flower garden you know is often visited by bees.

3. Two days before the eclipse, start making observations at least an hour before the time of the full eclipse. Take a 5-minute observation every 15 minutes, and count the number of bees you see foraging in the flower patch. Continue these observations for a least an hour past when the eclipse will occur.

4. Remember to start these observations (during the 2-hour period) two days before the eclipse, and continue for a couple of days afterwards. Observe, count and record the number of bees coming to flowers during that time each day.

5. Note conditions, or variables, each day — temperature, wind, rain, cloudy, sunny.

What did you see? What do your observations show? Do you think the darkening of the sky made a difference in how the bees behaved?

You can repeat this experiment by observing the activity of other insects in different environments, such as:

- The frequency of dragonfly movement
- The frequency of mosquitoes trying to land on your arm in a swampy area (Be sure to protect yourself!)
- Like honeybees, the frequency of butterflies in a garden or prairie visiting flowers

FOR MORE INFORMATION:

missouri.edu/eclipse
Experiment #2

1. Find a decibel meter that measures noise levels. If you have a smartphone, there are several free or inexpensive apps you can download. Just search “Sound or decibel meter.”

2. Follow the same steps as above, this time measuring the sound of crickets or cicadas in trees during the observation period instead.

Before you begin your experiment, be sure to state a hypothesis — what you expect to happen. You will test the validity of your hypothesis — whether it’s right — by comparing the observations you made each day.

What other questions could you ask? How would you try to find answers?

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Did you know?

Insects are the most successful organisms on the planet. Why are they successful? One of the reasons is that they are very good at sensing changes in the environment and taking appropriate actions for their survival.

- 50 percent of all described species (all living things) are insects
- Three-quarters of all animals on the planet are insects
- There are an estimated 3 million to 30 million insect species
- Entomologists (scientists who study insects) have only identified and studied about 1 million species