



**COMPLETE INTRODUCTION TO BIOLOGY**  
**(GRADES 3–5)**

**KT-BIOELM**

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Science Foundations Series

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## A DIVERSE WORLD

As you study the world around you, you will begin to see **diversity**, or many different types of things. This variety of organisms in an ecosystem is known as **biodiversity**. Biodiversity is one way of describing populations, categories of organisms, or entire ecosystems.

Imagine you're studying biodiversity in a pond. You would first see plants like cattails and water lilies. As you wait, animals like frogs, birds, and insects would begin to show up. Then, if you take an even closer look, you might notice algae. Each of the species you observe has different traits that make them unique and help them survive in that ecosystem.



Biodiversity is important to the health of an ecosystem. Species rely on one another for food, water, and shelter. When species are missing from an ecosystem, this can negatively impact the other species that rely upon it. For this reason, it's important to understand the biodiversity in your ecosystem, and the tools and methods you can use to study ecosystem health.

### ACTIVITY #1 - BEGINNING WITH A QUADRAT

**FROM THE KIT:** 4 dowels, electrical tape, and dissecting scissors.

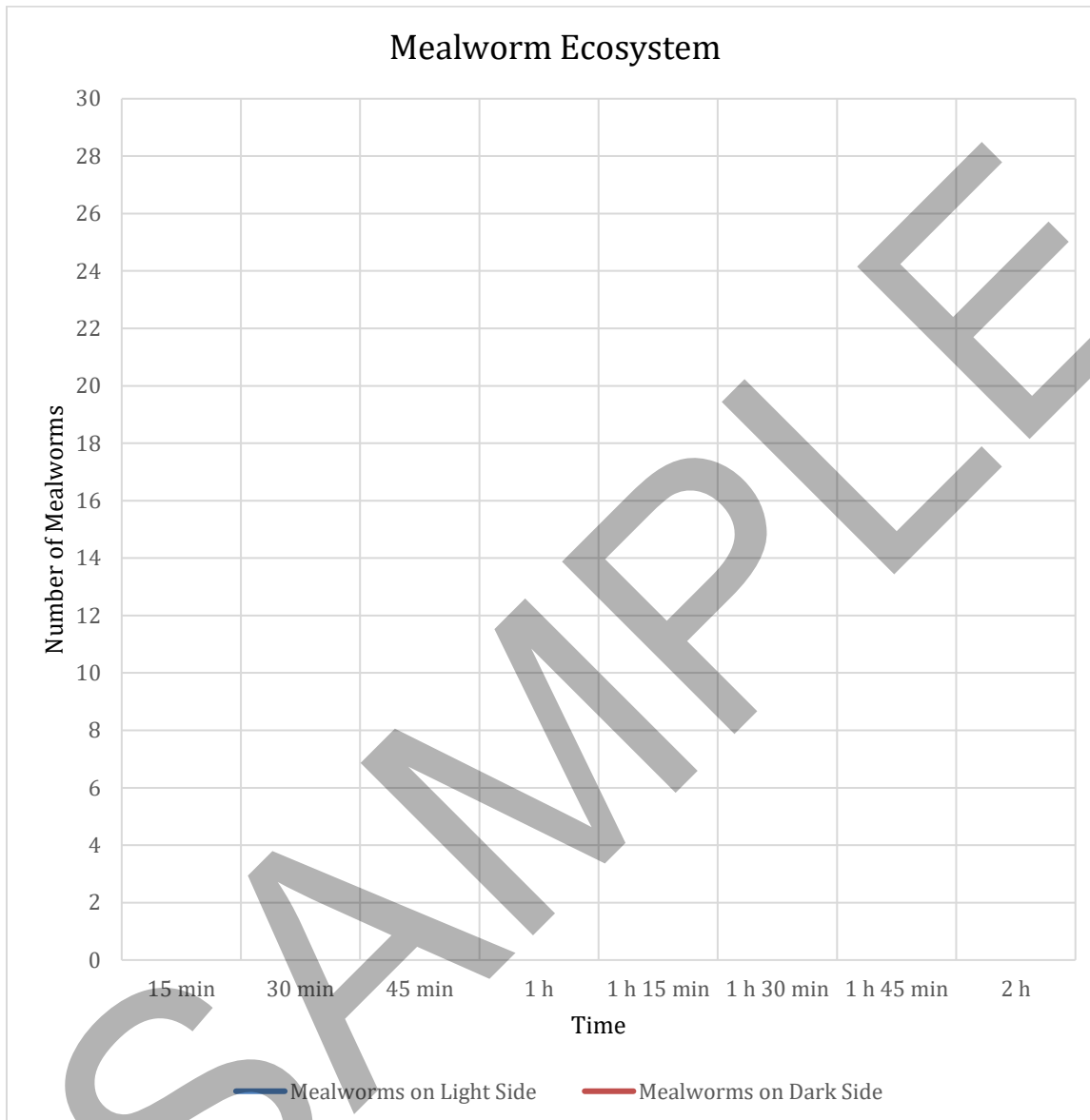
**NOTE:** You will need a partner to help you put your quadrat together. A **quadrat** is a square frame that marks off an area that you study.

1. Have a partner hold two dowels with the ends together like the corner of a square.
2. Wrap the electrical tape around the dowels to form a corner.
3. Use the dissecting scissors to cut the tape once the dowels are secure.



Figure 1. Example of the quadrat you will make.

5. Graph your data using a line graph. Use a blue line for the number of mealworms on the light side and a red line for the number on the dark side.



### What happened?

Mealworms, like many insects, live underground or in dark spaces. While they can survive in areas of light, they risk drying up when in direct light for too long. For this reason, you should have found that mealworms spent more time in the dark chamber than in the light one.

Mealworms are found in many ecosystems around the world, but they were originally from the coast of the Mediterranean Sea. The climate in this region includes hot, dry summers and cool, wet winters. In the summers, mealworms hide in moist, dark places where they will not dry out. In winters, they continue to stay underground because the temperatures are warmer there.



Figure 6. The Mediterranean Sea and surrounding continents

## PLANTS

While studying your ecosystem with a quadrat, you determined whether fruits or vegetables were eaten more. Both fruits and vegetables are part of the plant **kingdom**. A kingdom is a group of organisms with similar features. These features include roots, leaves, fruit, shoots, and more! The parts of plants are either in the root system or the shoot system.

Plants can have different root systems. The two types of roots are taproots and fibrous roots. Taproots are found in many vegetables, like carrots and radishes, which people eat. Taproots are good at storing water and food in plants. Fibrous roots spread out over a large space and are common in most trees. They help to hold the tree in place and keep it from falling over.

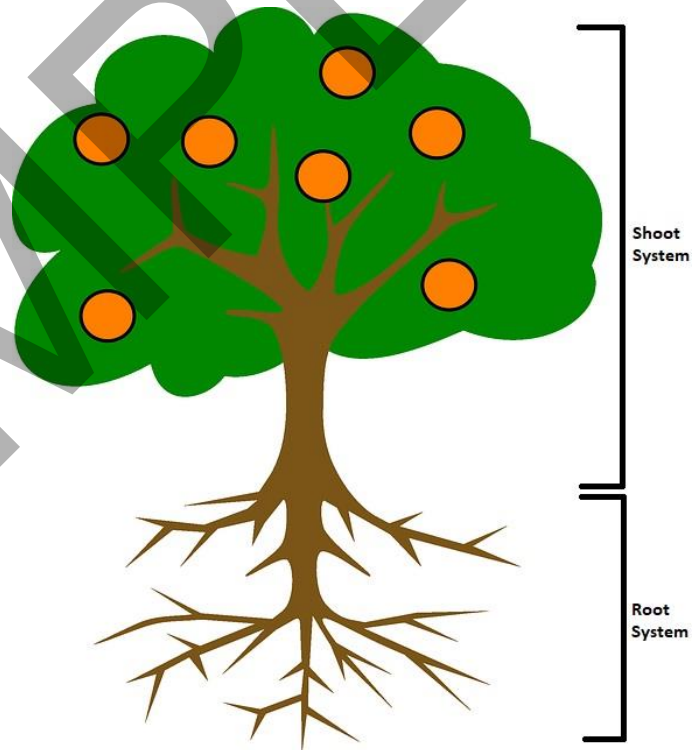


Figure 7. Tree Systems

Roots are important for plants to absorb water and nutrients. Water is necessary for plants to survive, and when the nutrients of a plant are not correct it can cause changes in how the plant grows.