# FOR CHANGE



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#### STUDENT WORKBOOK







### MUNCHING MEALWORMS

Plastic waste invades nearly every corner of the globe. In this activity, you will explore how those plastics break down and discover a surprising way to break them down faster.

#### UNUSUAL DIET ·



## Observe the photo and answer the following questions.

photo used with permission from Weimin Wu, ph.D, PE as part of this study: Yang, S., Brandon, A. M., Flanagan, J. C., Yang, J., Ning, D., Cai, S., . . . Wu, W. (2018). Biodegradation of polystyrene wastes in yellow mealworms (larvae of Tenebrio molitor Linnaeus): Factors affecting biodegradation rates and the ability of polystyrene-fed larvae to complete their life cycle. Chemosphere, 191, 979-989. doi:10.1016/j.chemosphere.2017.10.117

1. What are two things you observed in the photo?

2. What are two questions you have about this photo?



# **GROWING UP**

All organisms go through stages from birth to death. At each stage, organisms need food to grow and survive. While you might like to eat pizza now, you only ate soft baby foods when you were a baby. Just like you, animal diets change as they get older.

In this activity, you will discover the surprising food that young darkling beetles can eat.

#### LEARNING GOALS:



I can make models of life cycles with the stages of birth, growth, reproduction, and death.



I can make a model to show how matter and energy cycles through living and non-living things.

#### DARKLING BEETLES

In Activity 1, you saw adult darkling beetles on pieces of foam. The pieces had rough edges because they were chewed on and eaten, but adult darkling beetles did not eat the foam. Instead, the foam was eaten by a darkling beetle at a different stage of its life cycle. A life cycle is a set of stages that an organism goes through from birth to death. There are four stages to any animal's life cycle: birth, growth, reproduction, and death.



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4. Communication is important in science. Use the three models your created in the last sections to teach someone else about the life cycles of those animals. Then, write about the experience. Was it easy or hard? Which life cycle did you like teaching about most and why? If you were going to teach it again, what would you do differently?