

Montshire at Home: Teacher Guide

WEEKLY THEME: BUGS AND CREEPY CRAWLIES – Bugs can be found inside and outside the home—from spiders to bees, worms to ticks. In addition to looking for and catching bugs, students will use a variety of data collection forms to record their findings, including mapping, tallying, charting, and drawing.

MONTSHIRE AT HOME is a series of learning activities, resources and short videos, developed, hosted and curated by the Montshire's Education team. It's designed to support children, families, and teachers with easily accessible concepts, content, and materials while learning at home.

Teachers can use these materials to support remote science learning opportunities for their students at home. Below is a suggested learning progression using this week's theme, activities, and resources found on the Montshire's Online Resource web page.

SUGGESTED LEARNING PROGRESSION

Day 1: The Flowers and the Bees

EXPLORE

- ▶ Record a bee as it travels from flower to flower.
- ▶ How many flowers can a bee visit in a short amount of time?
- ▶ What do bees do when they land on a flower?
- ▶ What different types of bees are visiting flowers?

DISCOVER

- ▶ Bees are gathering nectar and pollen at each flower. Their tongue or proboscis can be seen reaching inside the flower.
- ▶ Honeybees can visit over 1,000 flowers a day. It takes 2 million flowers to gather enough nectar to make one pound of honey.
- ▶ Honeybees are a domestic species, but there are over 4,000 wild species of bees.

EXTENSIONS

- ▶ **Bug Scavenger Hunt:** Head outside to use the Montshire-made scavenger hunt to look for specific bugs and behaviors.
- ▶ **Nature Journal:** Create a journal of the bugs seen throughout the week using labeled drawings and notes.
- ▶ **Caterpillar Lab:** Explore the diversity and adaptations of local caterpillars through the educational films available on the Caterpillar Lab's Facebook page.

Day 2: Spider Spies

EXPLORE

- ▶ Record spiders inside and outside your home.
- ▶ How many different types of spiders can you find? How can you tell them apart?
- ▶ Do all spiders make the same type of web?
- ▶ What can you find in the spiders' webs?

DISCOVER

- ▶ Spiders are common animals easily found at home.
- ▶ Spiders will often hide in corners, safely waiting for prey.
- ▶ Egg sacs are common in webs. Look for round white balls of silk.
- ▶ Spiders, like many invertebrates, molt their exoskeleton. Look for empty spider husks.

Day 3: Ticks Up Close

EXPLORE

- ▶ Collect hitchhiking ticks and chart what month they were found.
- ▶ How can you tell different species of ticks apart from each other?
- ▶ Are there certain species of ticks that are more common to find on people?
- ▶ Watch a tick crawling on you. Can you feel it? Or do you have to do a tick check to find it?

DISCOVER

- ▶ Ticks are slow animals adapted to feeding on blood undetected.
- ▶ Ticks can carry germs in their spit, like the Lyme disease bacterium, that can infect people who have been bitten.
- ▶ Ticks are active during certain months based on their life cycle. This allows you to take extra precautions during tick months by doing daily tick checks.

Day 4: Knock, Knock, Who's Under This Rock?

EXPLORE

- ▶ Look for different bugs under a rock and map what you see.
- ▶ Can you find bugs or creepy crawlies that are not insects?
- ▶ What evidence of bugs can you find? For example, tunnels, trails, or eggs.
- ▶ Can you catch something to look at up close?

DISCOVER

- ▶ Small communities of bugs and other animals find safety (or food!) under rocks.
- ▶ Some of these animals are herbivores or decomposers (eating dead plants and wood), like wood lice, millipedes, and worms.
- ▶ Others find a safe space to hide during the day before they go out to eat at night, like slugs and snails.
- ▶ Some of these animals are predators hunting other bugs, like centipedes, salamanders, or spiders.

Day 5: Cockroaches and Stick Insects Live

EXPLORE

- ▶ Watch or join a live video to meet the museum's giant hissing cockroaches and stick insects.
- ▶ What body parts do cockroaches share with other insects?
- ▶ How do stick insects use different types of camouflage to stay hidden?
- ▶ What different adaptations do these two species of insects have?

DISCOVER

- ▶ Cockroaches are shy animals that hide to stay safe. They have long antennae for feeling in the dark and can fit in small cracks. They mainly eat old wood and plants.
- ▶ Stick insects use camouflage to stay safe. They have elongated body segments and legs that are colored and patterned to look like sticks. They hold still all day and then move at night to eat plants.



Activity: Bee Behavior

Biologists will track and follow an animal, recording everything it does. Be a bee biologist and follow a bee as it visits flowers. Record as many behaviors as you see.

Your 1st Bee

Draw your bee.

Keep a tally of the number of flowers your bee visited.

- ▶ There are many different types of bees! What did your bee look like? Describe colors, hair style, size, or any patterns it had.

- ▶ What types of flowers did your bee visit?

Your 2nd Bee

Draw your bee.

Keep a tally of the number of flowers your bee visited.

- ▶ There are many different types of bees! What did your bee look like? Describe colors, hair style, size, or any patterns it had.
-
-

- ▶ What types of flowers did your bee visit?
-
-

Keep Going

- ▶ Time how long you followed your bee and determine its flowers/minute rate.
- ▶ Other types of insects visit flowers. Can you find a fly, wasp, or butterfly? Hover flies are well known for mimicking the striped patterns of bees.



Activity: Flower Dissection

A flower is a plant's way of making new seeds. To do that, each part of a flower has a role to play.

Use scissors, toothpicks, tweezers, and a magnifying glass to open up a flower for a bee's eye view. Sort and tape your flower parts to the chart below.

Outside Parts

Inside Parts

STEMS hold the flower up and are strong enough not to break in the wind or under the weight of a big bumble bee.	<p>PETALS can act as colorful signs and funnels to help bees find the inside of a flower. Nectar is usually at the base of the petals.</p>	<p>PISITIL is the female part of a flower in the very center. Open up the pistil and look inside its base to see where the seeds grow.</p>
	<p>LEAVES are green and produce energy through photosynthesis so plants can grow.</p>	<p>STAMEN are the tiny pom-poms that surround the pistil. They are the male parts of the flower and produce pollen. Flowers use bees, animals, and wind to move pollen from one plant to another.</p>

Keep Going

Dissect different flowers to see how their parts compare. But beware of the dandelion. A single dandelion is made up of over 100 miniature yellow flowers!



Activity: Spider Spying Logbook

Spiders can live with you in your home and hang out outside. How many different types of spiders can you find at home?

Where to look

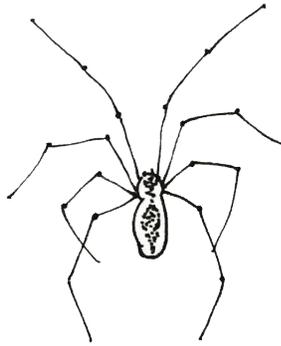
- ▶ In corners
- ▶ In windows
- ▶ Around lights
- ▶ By house plants

	Type 1	Type 2	Type 3
Give your spider type a name.			
Make a life size drawing of this type spider.			
Keep a tally of how many of this type of spider you can find.			
Spider notes: <ul style="list-style-type: none"> ▶ Does it have a round or skinny body? ▶ Does it have a spider web? ▶ Is anything caught in its web? ▶ Is there an egg sack? 			

Keep Going, Spider Spy!

- ▶ Choose one spider to follow over time.
- ▶ Look for spiders at night in windows.
- ▶ Take a photo of your spider to determine its species.
- ▶ Look for spider webs outside in the morning dew.
- ▶ Dust your house to find more spiders.

Common Spiders Around The Home



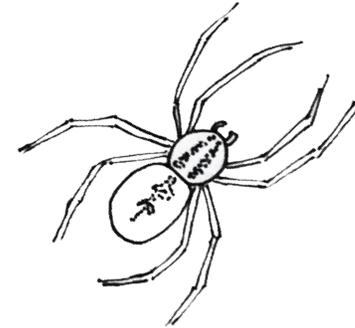
Cellar Spider

- ▶ Thin body
- ▶ Long Legs
- ▶ Knobby Knees



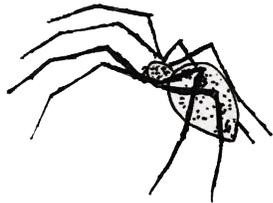
Cobweb Spider

- ▶ Small
- ▶ Teardrop Shaped Abdomen
- ▶ Hides in Corners



Carolina Spider

- ▶ Hairy Body and Legs
- ▶ Fast Crawler
- ▶ Stands it Ground



Orb Spider

- ▶ Giant Abdomen
- ▶ Thick Legs
- ▶ Beautiful Web



Jumping Spider

- ▶ Quick Jerky Movements
- ▶ Noticeable Eyes
- ▶ Doesn't make a web



Daddy Long Legs

- ▶ Spider Relative
- ▶ Lucky to Have all 8 Legs
- ▶ One Merged Body and Head



Crab Spider

- ▶ On Plants
- ▶ Camouflaged
- ▶ Ambush Hunter



Activity: Tick Activity Chart

Ticks are small, slow bloodsuckers. The most common species live for two years, but only eat three times in their entire lives. Knowing when ticks are actively looking for a blood meal can help us stay safe and remember to do daily tick checks when we've been outside.

Track when ticks are active by catching them when they crawl on you, your family, or even your pets. Put them between two pieces of tape. Then tape them to the six month chart below.

MAY	JUNE	JULY
AUGUST	SEPTEMBER	OCTOBER

Daily Tick Check

Ticks hide when they bite, so use a mirror to look in hard-to-see spots like:

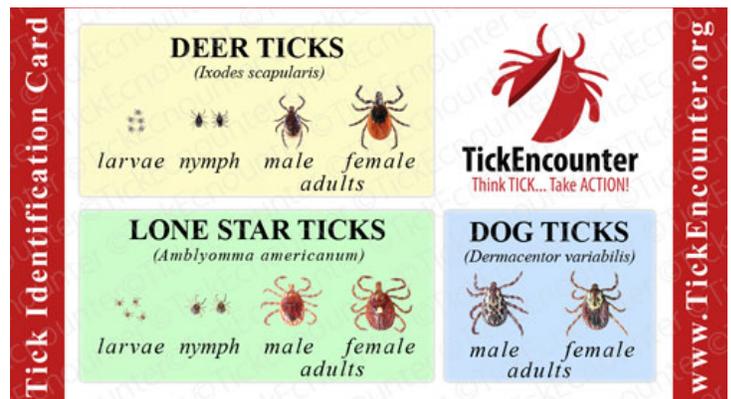
- ▶ Behind Knees
- ▶ Under underwear
- ▶ Under Socks
- ▶ Behind ears

Symptoms of Tick Born Diseases

- ▶ Summertime flu (fever, aches, exhaustion)
- ▶ Skin rashes (though every tick leaves a bug bite, just like a mosquito)

What tick did you catch?

- ▶ Use the ID card from TickEncounter to identify your ticks. As blood sucking parasites, different species of ticks can carry different diseases in their spit, but they can only pass on those diseases if they bite you.
- ▶ For example, black legged ticks (also known as deer ticks) are the only ticks that carry Lyme disease, the most common tick born disease in New England. Black legged ticks must be biting and feeding for 36-48 hours to transmit the disease. Plenty of time to do a tick check!





Activity: Knock, Knock ... Who's Under this Rock?

There are entire worlds of bugs hiding under rocks. Simply turn one over! Map and record everything you find.

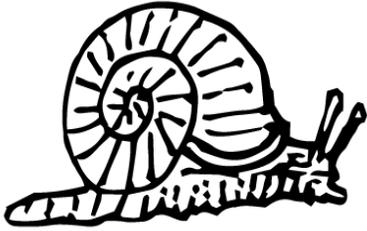
1. Draw an outline of your rock on the grid to start your rock map.
2. ▶ Draw evidence that bugs and animals live under your rock.
 - ▶ Holes
 - ▶ Tunnels
 - ▶ Eggs
 - ▶ Slime
3. Draw any animals or bugs you see. Which box should they go in?
 - ▶ Insects
 - ▶ Slugs
 - ▶ Centipedes
 - ▶ Salamanders
 - ▶ Wood Lice
 - ▶ Spiders
 - ▶ Worms
 - ▶ Millipedes
4. Add labels and arrows to your rock map to identify what you found.

Your Notes
(habitat, weather, location, size, etc.):

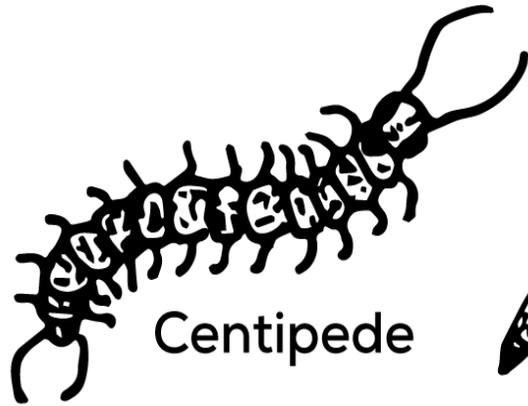
Creepy Crawlers

Beetle Larvae

Snail

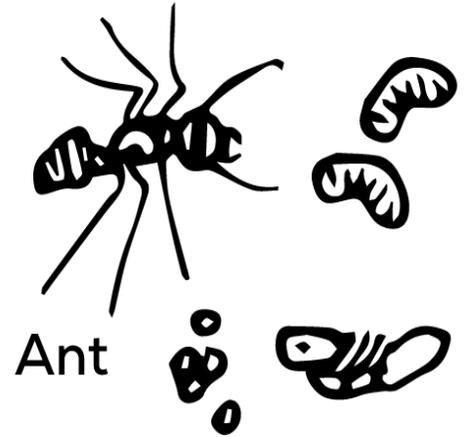
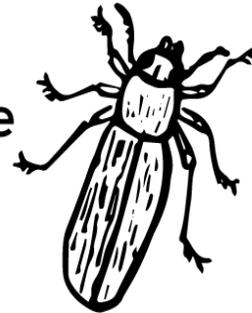


Millipede

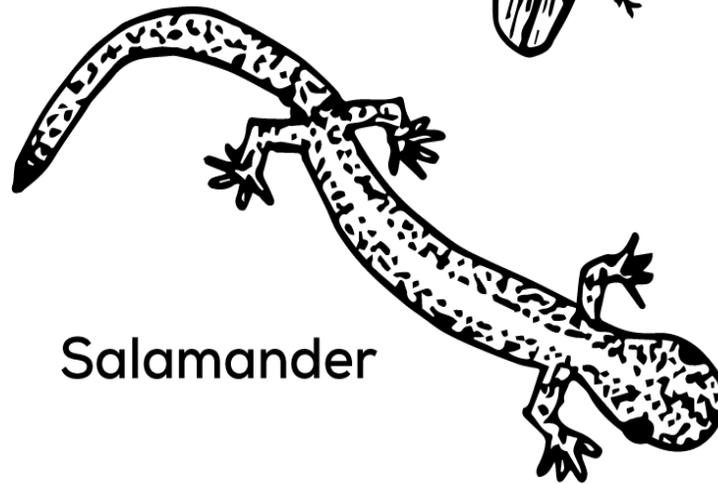


Centipede

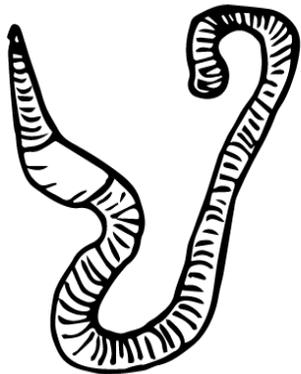
Beetle



Ant



Salamander



Earthworm



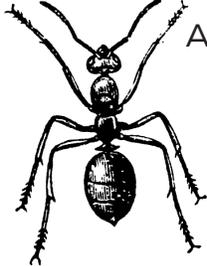
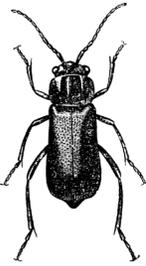
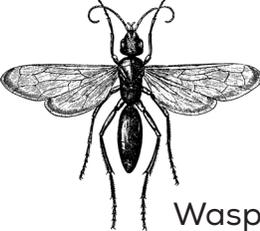
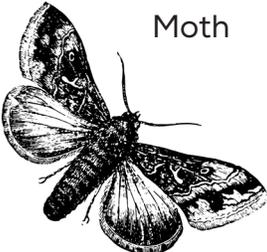
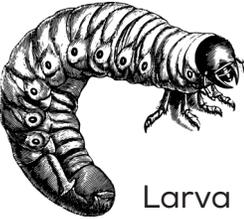
Slug

Wood Lice





Activity: The Bug Scavenger Hunt

Find a mosquito with your ears.	 <p>Ant</p>	Look inside a rotten log.	Dig under leaves.	 <p>Beetle</p>
Follow an ant.	Hold a worm. Where is its front or back end?	Look for an animal eating a bug.	 <p>Wasp</p>	Identify a tick you've found.
Count the legs on a millipede.	Find a spider web outside in the grass.	 <p>Moth</p>	Count how many bugs visit one flower in one minute.	Look under a rock.
 <p>Larva</p>	Watch a caterpillar move.	Count the eyestalks and tentacles on a slug.	Rescue worms on a rainy day.	Find a bug hiding in the bark of a tree.
Find a spider egg sack wrapped in white silk.	Look for bugs around a light at night.	Worm poop – it looks like (and is) small piles of round dirt balls.	 <p>Grasshopper</p>	Find a wiggly mosquito larva in a water filled container.