

CYCLE 3 • WEEKS 25–27 •

VOCABULARY

- decomposer – an organism that breaks down the remains of plants and animals
- microorganism – fungi, molds, and bacteria that are only visible to the naked eye when present in large numbers
- scavenger – an animal that eats animals that are already dead
- organism – a living thing
- cilia – little hairs on the margin of a lichen
- isidia – a vegetative means of propagation for lichens
- lobe – a flattened branch, generally found on foliose lichens
- mycobiont – the fungal partner of a lichen
- photobiont – the photosynthetic partner of a lichen
- spore – in lichens, produced by the mycobiont only for sexual reproduction
- symbiosis – a relationship between two or more organisms in which at least one organism benefits from the other.
- thallus (thalli) – the vegetative body of the lichen, composed of both fungus and alga.
- tomentum – colorless hyphae that look like short fuzz or hairs on the outside of the lichen
- behavioral ecology – the study of evolutionary and ecological basis for a particular animal behavior
- stimulus – an external sensory stimulus that triggers a fixed pattern
- isopod – crustaceans of the order Isopoda, characterized by a flattened segmented body usually bearing seven pairs of legs

CYCLE 3 • WEEKS 28–30 •

VOCABULARY

- micro – very small or microscopic
- biodiversity – variety of life
- bristle – to be covered or thick with
- biota – the animal and plant life of a region; flora and fauna
- entomologist – one who engages in the scientific study of insects
- insect – small arthropod animals of the class Insecta, having an adult stage characterized by three pairs of legs and a body segmented into
- Berlese funnel – an apparatus that separates and preserves small insects found in ground litter and consists of a sieve placed over a funnel connected at the bottom to a preserving bottle
- arthropod – an invertebrate animal of the large phylum Arthropoda such as a spider, insect, or crustacean
- micro-invertebrates – small microscopic life forms
- worm – a small, tube-shaped invertebrate with no arms or legs
- clitellum – in leeches and earthworms, a thick depression of the body wall that functions in reproduction
- compost – organic matter left to decay; transforming from an unstable state to a stable state
- vermicomposting – composting with the use of earthworms

OBJECTIVES

Students will learn about bugs and plants living on the Earth.

- Decomposers
- Pollution
- Insect Behavior
- Micro-Invertebrates
- Bug habitats
- Pollinators
- Random Sampling
- Patterns
- Music



Cycle 2 ♥ Bugs & Plants

“Protect us bees, Don't burn our lives. Protect us bees And spare our lives. We pollinate trees, And now you know, Without us bees, Some plants won't grow.”

–WAYNE GERARD TROTMAN

DISCUSSION QUESTIONS

Cycle 3 focuses on bugs and plants

- Can you explain the connection from one weekly focus to another?
- How are some bugs and plants connected?
- Why is it important to count plant or animal species in certain environments?
- How can pollution affect plants and lichen?
- What is the importance of compost?
- How is nature connected to the Golden Ratio?
- What are insects roles in helping to maintain the health of soil and plants?



CYCLE 3 • WEEKS 31–33 •

VOCABULARY

- nectar – a sweet liquid reward for pollinators that is produced by flower glands called nectaries
- pistil: the female part of the flower including the stigma, style, and ovary
- pollen: the fine, powder-like material produced by the anthers of flowering plants
- pollinator – something, such as an insect, that carries pollen from one plant or part of a plant to another
- stamen: the male part of the flower consisting of the anther and filament
- hapa-zome – is the Japanese technique of smashing flowers and leaves into fabric
- dye – to color or stain; treat with a dye; color (cloth, hair, etc.) with a substance containing coloring matter:
- forage – search widely for food or provisions
- pigment – the natural coloring matter of animal or plant tissue
- print – an indentation or mark left on a surface or soft substance by pressure
- organic materials – A material that has grown from the ground
- pollution –the presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects
- biodegradable – materials that will decompose or break down, such as food scraps or wood
- recycle – to treat or change waste so that it can be used again
- groundwater – fresh water under the Earth's surface
- conservation – to use less of a natural resource

CYCLE 3 • WEEKS 34–36 •

VOCABULARY

- petal – part of the perianth that is usually brightly colored (also called corolla)
- perianth – the outer part of a flower, consisting of the calyx (sepals) and corolla (petals)
- blossom – a flower or cluster of flowers on a plant
- bud – a partially opened flower
- golden ratio – is a special number approximately equal to 1.618 that appears many times in mathematics, geometry, art, architecture, and other areas. It is often found when taking the ratios of distances in simple geometric figures such as the pentagram, decagon, and dodecagon
- golden section – the proportional relation between two divisions of line or two dimensions of a plane figure such that short : long :: long : (short + long)
- golden mean – the middle between extremes
- decagon – a closed shape with ten sides and ten angles
- acoustics – the science of sound and how it's produced
- beat – the regular repeated pulsation in music
- chord – two or more notes of different pitch sounding together
- elements of music – dynamics, form, harmony, melody, texture, timbre, rhythm, tempo
- folk songs – songs handed down from generation to generation
- rhythm – the element of music that deals with the beat or pulse and the distribution of notes within that beat

CYCLE 3 • WEEKS 25–27 • FOOD FOR THOUGHT

- Week 25 – Make some yummy dehydrated mushrooms. Gather 4 cups of mushrooms with nice thick caps. Use a food processor with a slicing blade or a knife to slice mushrooms into thin slices, about 1/8th inch thick. Season them with 1 tablespoon lemon juice, 1/2 teaspoon sea salt, 1/2 teaspoon powdered garlic, 1/2 teaspoon dried parsley. Gently scoop mushrooms from the bowl, and place them onto a dehydrator tray. Spread evenly in a single layer over the tray, they can be touching but shouldn't be piled to allow for even air distribution. Dehydrate on high for 4–6 hours, or until crisp. Serve, or keep in an air-tight container once cooled.
- Week 26 – Since lichen is made of algae and fungi, try some algae snacks this week by sampling different types of store-bought seaweed.
- Week 27 – Go back to a childhood classic and make "ants on a log." This is an easy one the kids can make themselves. Grab some celery, cut it into small sticks, fill it with your favorite nut (or nut-free) butter, and throw some raisins on top.

CYCLE 3 • WEEKS 28–30 • FOOD FOR THOUGHT

- Week 28 – Make this yummy "Bug Juice" to refresh your Barefooters after the micro hike. Blend two cups of diced honeydew and about seven large mint leaves until you have a smooth mixture. Push the mint and melon combo through a strainer and save the juice. Take that minty melon juice and mix it with a cup of pineapple juice. If you want to make the juice extra buggy, plan ahead and freeze some raisins in ice cubes so it looks like insects are floating in the juice.
- Week 29 – Crackers Beetles – Stock up on these ingredients: round crackers, cream cheese, hummus or nut butter, pretzel sticks. Choose your beetle's filling and spread it on a cracker. You need a good layer of filling here to hold on to the beetle's legs, so shoot for a tablespoon or so. Top this with another cracker. Then, stick three pretzels on each side of the bug to make legs. There you have it: A quick and buggy snack.
- Week 30 – Make edible warm jar snack cups by layering crushed graham crackers and vanilla pudding in a small, clear cup and hiding gummy worms in between and on top of the layers.



CYCLE THREE CHALLENGE: PLANT A POLLINATOR GARDEN IN YOUR YARD.



"If insects were to vanish, the environment would collapse into chaos." - Edward O. Wilson

DID YOU KNOW?

- Fruit flies were the first living creatures to be sent into space.
- A bee's wings beat 190 times a second, that's 11,400 times a minute.
- An ant-eating assassin bug piles its victims onto its body to scare predators.
 - 85% of plant life is found in the ocean
 - There are over 300,000 identified plant species and the list is growing all the time.
- A sunflower looks like one large flower, but each head is composed of hundreds of tiny flowers called florets, which ripen to become seeds.

CYCLE 3 • WEEKS 30–32 • FOOD FOR THOUGHT

- Week 31 – Sweeten things up with Honey Scones! You need 2 cups flour, 1 tbsp baking powder, 1/4 tsp salt, 7 tbsp unsalted butter, cut into 1 tbsp squares, 3/4 cup heavy cream, 1 tsp vanilla, 1/4 cup honey. Preheat oven to 375. Mix the dry ingredients. Using two knives, cut in the butter until well mixed and you have pea-sized chunks. Combine wet ingredients and then pour into the dry bowl. Stir until the mixture comes together into a ball. Transfer to a lightly floured surface. Knead briefly until it just comes together. Shape into an 8x8" square. Cut dough into 2x2" squares, and then into triangles. Transfer to a baking sheet. Bake 8–12 mins.
- Week 32 – Forage this week and collect dandelion petals to make bread. You need 2 cups of flour, 1 cup of petals, 1/2 cup honey, 1 egg, 3 tbs oil, a pinch of salt, 2 tsp baking powder, and 1 1/4 cups milk. Preheat the oven to 400. Mix wet and dry ingredients in separate bowls. Then add them together until incorporated. Pour into a sprayed bread pan and bake for 15 mins. Then turn the oven to 350 and bake another 15 mins. Enjoy!
- Week 33 – Make low-waste Mango Pudding this week. Grab 2 cups mango, 1 tsp Agar-agar powder, 1/2 cup almond milk, 1/2 cup water cup, 1/4 cup brown sugar (Extra: Sliced mango pieces) First, mix agar-agar powder and brown sugar, add mango, almond milk, and water together in a pot over medium heat. Stir until boiling. Blend mixture with a mixer or blender to smooth. Divide into small bowls or jars. As an added bonus, place a piece of mango on top of each pudding. Cool for a half-hour before placing into a fridge for 2 hours.

CYCLE 3 • WEEKS 33–36 • FOOD FOR THOUGHT

- Week 34 – Make ice cubes. Find edible flowers or berries and place them in an ice cube tray & freeze for a pretty touch to your tea or water.
- Week 35 – To celebrate the golden ratio, make two different colored 8x8" sponge cakes and grab your favorite jam. Completely cool the sponges and cut off the tops. You want cake 1 to be 5cm high, and cake 2 to be 3cm high. (if this is tricky, chill or freeze the sponge and it will be easier to cut) From sponge 1: cut two 5cm-wide strips, into planks of sponge that are 5cm square in cross-section. Also cut 2, 2cm square planks and 2, 1cm square strips. When maneuvering strips, guard against breakage by rolling them sideways onto a long blade rather than picking them up by ends. From sponge 2: cut 2, 3cm square planks and 2, 1cm square delicate strips. Heat jam & paint the sides of the sponge, gluing strips together with the jam as you stack them into a golden ratio rectangle. Optional: roll the outer edge in nuts, marzipan, or coconut flakes.
- Week 36 – Make piano sandwiches. Grab some white bread & cut the crust off. Add your favorite toppings and cut the sandwich into three "fingers." Line up the sandwiches in a row. Cut pumpernickel bread into 1/2-in. strips then cut each in half widthwise. Place over the white strips for "black keys." Use jam, mayo, or cream cheese to attach the keys.