

WHY SHOULD WE LOVE BUGS? SUMMER CAMP

ENTO 896

SPRING 2021

CONTRIBUTORS:

Julia Schwierking, Sarah Roberts, Lynda Elaine, & Deserae Emmett

BOOK: *THE BUG GIRL* BY SOPHIA SPENCER

This camp is based around the story of Sophia Spencer, a young girl who loves bugs!

CAMP LAYOUT

This 4-day camp stems from the insect-loving, real-life character, Sophia Spencer. We designed each day for children ages 5-7, but the activities can be modified to fit any age group.

Due to the target age, each camp day lasts for approximately 3 hours. The formatting for the day is the same, but the activities change based on the daily topic.

THE FORMAT IS AS FOLLOWS:

- Arrival/Free Play: 9am-9:15am
- Introduction: 9:15am-9:45am
- Outdoor Exploration: 9:45am-10:45am
- Snack Time: 10:45am-11am
- Close Focus: 11am-11:20am
- Game/Experiment: 11:20-11:40am
- Wrap Up/Free Play: 11:40am-12pm

CAMP TOPICS

We chose camp topics based on our own interests as well as suggestions derived from our chosen children's book. These topics could be changed or modified depending on the type educator teaching (e.g. informal educator, formal educator, etc.) or if a different children's book is chosen.

CAMP TOPICS:

- What Makes an Insect an Insect?
- Nature/Science Careers
- My Favorite Bug
- Women in Entomology



WHY SHOULD WE LOVE BUGS? SUMMER CAMP



DAY 1 (JULIA)

SUMMER 2021

TOPIC: WHAT MAKES AN
INSECT AN INSECT?

DAILY SCHEDULE: 9AM-12PM

FREE PLAY: 9AM-9:15AM - MATERIAL EXPLORATION

Gather a variety of materials including blocks, insect books, puzzles, coloring supplies, and toy insects for children to explore as they arrive.

INTRODUCTION: 9:15AM - 9:45AM

Introduce camp rules (see resources). Read "The Bug Girl" and discuss with children using suggested questions (see resources)

WHAT MAKES AN INSECT AN INSECT?

- Three main body parts: head, thorax, abdomen
- Six legs
- Two antennae
- Some have wings: four or two (only other animals that fly are birds and bats)

HEAD, THORAX, ABDOMEN

(to the tune of Head, Shoulders, Knees, and Toes) See video for movement suggestions to go along with song.

Head and thorax abdomen, abdomen
Head and thorax abdomen, abdomen
Two antennae and six legs
Head and thorax abdomen, abdomen

How are insects similar and different from spiders?

- 6 vs. 8 legs & 3 vs. 2 body parts
- Fangs with venom
- Exoskeleton (both)
- Both breath through spiracles
- Both lay eggs
- Both have similar habitats

OUTDOOR EXPLORATION: 9:45AM - 10:45AM

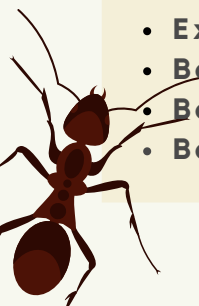
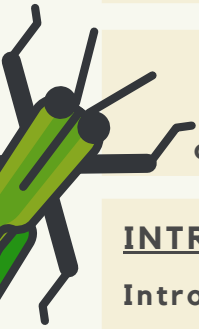
- Bug boxes
- Small bug nets
- Magnifying lenses
- Guidebooks or common insect bug sheets
- Spray bottle with clean water to mist children on hot days
- Large aerial net (carried by teacher/s to collect butterflies, dragonflies, etc.)
- Cage or container (for larger insect observation/care)

EXPLORATION

Allow children to look at their bug boxes. What size insects could comfortably fit? Choose a habitat to explore. What habitat are you exploring (sunny/shady, hot/cool, wet/dry etc.)? What might you find in this habitat? What are the insects you find doing? Is what they are doing helpful to humans? Is what they are doing helpful to the planet or other animals? (e.g. Pollination) If visiting more than one habitat, compare similarities/differences in habitats

SNACK TIME: 10:45AM - 11AM

Choose a healthy snack to make or share with children.



WHY SHOULD WE LOVE BUGS?

SUMMER CAMP



DAY 1 CONT.

SUMMER 2021

TOPIC: WHAT MAKES AN INSECT AN INSECT?

DAILY SCHEDULE: 9AM-12PM

CLOSE FOCUS: 11AM - 11:20AM

Observe a large insect breathing through its spiracles or view videos of insects breathing (see resources). Where are the spiracles on an insect located? How do other animals breathe? Move your abdomen and breathe like an insect.

Look at insect eyes. What do you see?

- Compound eyes: Larger eyes made up of many smaller eyes or ommatidia.
- Simple eyes: Like our eyes, but insects can have more than two. Example: Praying Mantids have three simple eyes in a triangle on their head.

GAME: 11:20AM-11:40AM

Play "Bees and Honey" game. See next page for instructions.

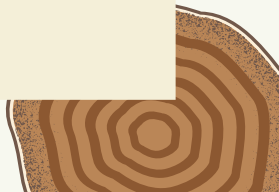
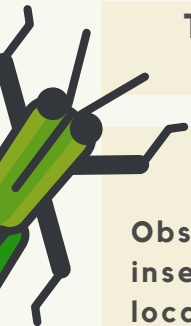
Supplies:

- 6 - 8 small cereal sized bowls or containers that can hold liquid
- Small sponges – 1 per child (can cut larger sponge into 3-4 smaller sponges)
- Mason jar sized container (clean plastic peanut butter containers work well)
- Water to fill bowls

WRAP UP: 11:40AM - 12PM

Revisit what makes an insect an insect.

- How are insects helpful? (e.g. pollination, clean-up (decomposers), honeybees make honey, some keep pest/harmful insects under control)
- Why should we appreciate insects?
- How were you kind to insects today? How were you kind to each other?
- Has your opinion of insects changed?



WHY SHOULD WE LOVE BUGS?

SUMMER CAMP



DAY 1 CONT.

SUMMER 2021

TOPIC: WHAT MAKES AN
INSECT AN INSECT?

DAILY SCHEDULE: 9AM-12PM

GAME: 11:20AM-11:40AM

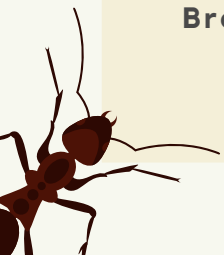
BEES & HONEY

Instructions:

- Place bowls scattered about a lawn area or other area that will not be damaged by water spilling.
- Fill bowls $\frac{3}{4}$ full of water.
- Children are the worker bees, and they need to collect enough "nectar" (water) from the "flowers" (bowls) so their hive can make enough honey to survive winter, meaning they fill the "hive" (mason jar sized container).
- Honeybees never bump into each other while flying, so children must avoid bumping into each other during the game. If any bees bump, they must sit out for the count of 10 honeybees.
- Give each child a sponge. This is the only thing children may use to collect the nectar from the flowers and get it back to the hive. How can they can do this? Children should dip their sponge in a bowl to soak up water, then run back and squeeze it (one at a time) into the hive.
- The teacher will be the queen bee holding the hive.
- Set a timer for 3 minutes and tell children to start using their sponges to collect the nectar. Give them a 30 second warning before time is up, and winter has almost arrived.
- At the end of time, all bees fly back to the hive to see if they were successful in filling the jar.
- If time allows, the game can be reset and played again.

Suggested modifications to help children think about how different things can affect honeybee's success in collecting enough nectar:

- Wildflower meadow turned into a lawn, parking lot, etc.
- Remove a few flowers and space the ones left further apart.
- Less time to gather nectar because of weather conditions such as an early or late frost that kills flowers and makes it too cold for the bees to fly. Set the timer for a shorter amount of time.
- Have kids think of other things that might affect the bees' success rate. Brainstorm how to modify the game to mimic that scenario.



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DAY 2 (SARAH)

SUMMER 2021

TOPIC: SCIENCE/NATURE
CAREERS

DAILY SCHEDULE: 9AM-12PM

FREE PLAY: 9AM-9:15AM - PAINT CHIP SCAVENGER HUNT

Using natural colored paint samples (acquire from hardware stores, distribute paint samples to children as they arrive. Have them try to match the paint sample to something in nature around them. Continue to give samples as children match colors.

INTRODUCTION: 9:15AM - 9:45AM

Re-Read "The Bug Girl" and talk about different jobs that exist. Provide a variety of books on different science/nature careers.

- What do you want to be when you grow up?
- What is similar and different about the range of science and nature careers?
- What do you think it would take to have a science and/or nature career?
- Provide paper and drawing supplies for children to draw their "dream job".

If available, research different careers and what people do in their jobs.

OUTDOOR EXPLORATION: 9:45AM - 10:45AM - JR. RANGER NATURE BADGE

- Explore an outdoor area and collect a variety of nature items. Try to gather items that are already on the ground or obtain permission to pick leaves or flowers off living plants.
- Break into groups or partners and sort items into chosen categories (e.g. big, small, rough, smooth, etc.).
- Using the cardstock badge template (see resources), glue/tape items to create your own Jr. Ranger Nature Badge.



SNACK TIME: 10:45AM - 11AM

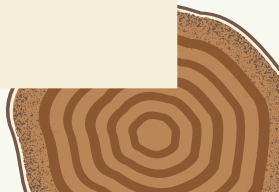
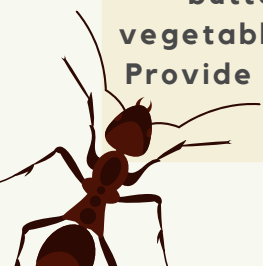
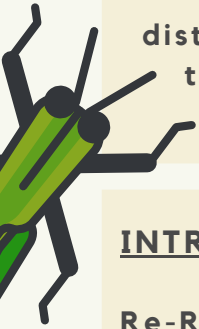
Gather different vegetables such as baby carrots, cherry tomatoes, sliced cucumbers, and bell peppers. Encourage children to create an insect of their choice (e.g. a butterfly or caterpillar) using vegetable before eating their snack. Provide pictures of various insects if desired.

CLOSE FOCUS: 11AM - 11:20AM

Grasshoppers were some of Sophia's favorite insects in "The Bug Girl". Catch a few grasshoppers to observe or look up pictures and videos online.

- What special features do grasshoppers have?
- Why do you think Sophia loved grasshoppers so much?

After observing your grasshoppers, record their actions through drawings and/or words.



WHY SHOULD WE LOVE BUGS? SUMMER CAMP



DAY 2 CONT.

SUMMER 2021

TOPIC: SCIENCE/NATURE
CAREERS

DAILY SCHEDULE: 9AM-12PM

GAME/EXPERIMENT: 11:20AM-11:40AM - NATURE/SCIENCE
CAREER BINGO

After exploring different science and nature careers, use the bingo card in the Resources section to play Science & Nature Career Bingo. Feel free to print and make copies for as many campers in attendance.

Bingo Marker Options:

- Tear paper into small pieces
- Use crayons, pencils, etc. to mark an "x" on each picture
- Gather pennies or other coins to place on bingo card

Clues are provided for each career picture in Resources section.

Prizes can be provided if desired.

Prize Suggestions:

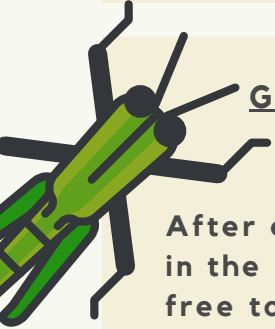
- Plastic insects
- Picture books about insects
- Insect stickers
- Miniature magnifying glasses

WRAP UP: 11:40AM - 12PM

Revisit The Bug Girl and Sophia's love for insects.

- What do you think she will grow up to be?
- What was your favorite science/nature career that you learned about today?

If there is time left, feel free to allow free time or play another round of bingo!



WHY SHOULD WE LOVE BUGS? SUMMER CAMP



DAY 3 (LYNDA)

SUMMER 2021

TOPIC: MY FAVORITE BUG

DAILY SCHEDULE: 9AM-12PM

FREE PLAY: 9AM-9:15AM - MATERIAL EXPLORATION

Gather a variety of materials including blocks, insect books, puzzles, coloring supplies, and toy insects for children to explore as they arrive.

INTRODUCTION: 9:15AM - 9:45AM

OPENING QUESTIONS:

What have you learned about insects so far? What science/nature jobs are you interested in?

MY FAVORITE INSECT: EARWIGS

Obtain live earwigs and/or view videos of earwigs (see resources)

- What features do earwigs have that make them insects?
- What do you think of earwigs?
- What do you think their pincers are used for? Would it hurt if you were pinched?
- How do earwigs nurture and raise their young?
- How do earwigs benefit the ecology?
- Where are earwigs found outside? Have boxes set up with habitats (no live earwigs) and fake earwigs for children to discover.
- What do earwigs eat? In nature, they eat leaves and other insects. Inside the home, they may eat cookies or bread.

OUTDOOR EXPLORATION: 9:45AM - 10:45AM

Have children explore around the building for earwig habitats. They should take their magnifying glasses. Have different habitat boxes set up outside with 'fake' earwigs to be discovered. Discover food sources for earwigs.

SNACK TIME: 10:45AM - 11AM

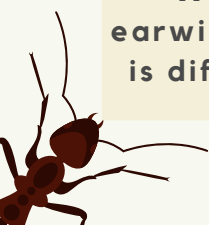
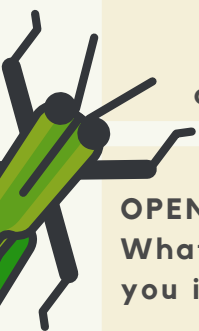
Have snacks available that could be eaten by earwigs and have children pretend to be earwigs while eating using their fingers as pinchers.

CLOSE FOCUS: 11AM-11:40AM

Each child should choose a favorite insect toy or picture. Have each child say why it is their favorite. Have each child draw and color their favorite insect to take home.

WRAP UP: 11:40AM - 12PM

What do you think of earwigs after learning about them? Discuss where earwigs are found in nature. Talk about the habitats they discovered and what is different about them. What is the same? What makes an earwig an insect?



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DAY 4 (DESERAE)

SUMMER 2021



TOPIC: WOMEN IN ENTOMOLOGY

DAILY SCHEDULE: 9AM-12PM

FREE PLAY: 9AM-9:15AM

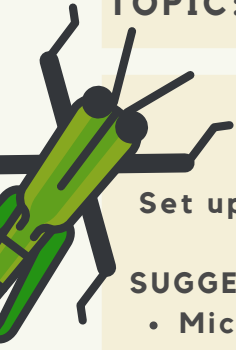
Set up a table with different entomological supplies the evening before Day 4 of camp.

SUGGESTED ENTOMOLOGY TOOLS AND SUPPLIES:

- Microscope
- Slides
- Forceps
- Lepidoptera spreading boards
- Pins and Labels
- Collection display cases with various insect species
- Nets and Collection Supplies

Invite children to explore the items on the table as they arrive. Allow time for questions and comments from children.

- What does an entomologist do?
 - An entomologist studies insects.
 - Some entomologists study one insect and others study many different insects.
- Why do people study insects?
 - Studying insects is fun!
 - Insects can tell us about what is happening in the environment.
 - Weather events
 - Soil and water quality
 - Changes in the habitat
 - Create an insect collection.
 - Where was the insect found?
 - Was the insect on a plant?
 - Was the insect in water?
 - What other important information would an entomologist need to describe an insect they collected?



WHY SHOULD WE LOVE BUGS? SUMMER CAMP

DAY 4 CONT.

SUMMER 2021

TOPIC: WOMEN IN ENTOMOLOGY

DAILY SCHEDULE: 9AM-12PM

INTRODUCTION: 9:15AM - 9:45AM

Ask students to name some famous people. They may respond with names of actors or musicians. Ask students if they knew there are also famous scientists such as women entomologists. Introduce students to entomologists and their significance to the field. Show a picture of each entomologist and give a couple of highlights for their fame (see website in Resources).

EDITH PATCH

- The first female president of the Entomological Society of America.
- ESA is an organization for entomologists from all over the world to collaborate.
- The first recognized female entomologist in the United States.

DAME MIRIAM ROTHSCHILD

- Studied as an entomologist for over 70 years.
- Her research provided evidence of the monarch butterfly using the milkweed as a defense. Monarch eats poisonous milkweed to avoid being eaten. Birds know to avoid the monarch because of the orange and black coloration on their wings.

ANNA BOTSFORD COMSTOCK

- Famous nature illustrator
- Vast knowledge of different insects
- First female professor at Cornell University, 1897

MARIA SYBILLA MERIAN, THE MOTHER OF ENTOMOLOGY

- Famous for her entomology illustration
- Published books of nature illustrations
- Her face is on the 500 Deutschmark

DR. BERTA SCHARRER (1906-1995)

- Studied cockroaches
- Wrote a book with her husband on neuroendocrinology (Study of the connection between the brain and the endocrine system.)

Pioneering women entomologists often worked without pay. They worked as entomologists because they loved insects and wanted to share their finding with others.

WHY SHOULD WE LOVE BUGS? SUMMER CAMP



DAY 4 CONT.

SUMMER 2021

TOPIC: WOMEN IN ENTOMOLOGY

DAILY SCHEDULE: 9AM-12PM

OUTDOOR EXPLORATION: 9:45AM - 10:45AM

Students will become "entomologists for a day" by collecting insects from the outdoor exploration area. Instructors can ask students questions to reiterate material learned in the previous days.

SAMPLE QUESTIONS:

- How many legs does an insect have? This question can help students separate insects from other arthropods such as centipedes and spiders.
- Where did you find the insect? Was it on a flower? The ground? A tree?
- What do you think the insect eats? This question can help students make the connection between where they found the insect and if the insect uses it as a source of food.

SNACK TIME: 10:45AM - 11AM

TRAIL FOOD THEME:

Place a variety of snacks in separate bowls that can be selected and combined to create their own trail mix. Place a spoon or tongs in each bowl. Give each student a Ziplock bag to fill. Students can form a line at the table and select which snacks they want in their mix. Instructors can place the chosen snacks in students bags to avoid food contamination.

CLOSE FOCUS: 11AM - 11:20AM

There are many things about the insect world that have not been discovered. Many species have not been discovered.

Things to ponder: Ask students to think to themselves about becoming an entomologist and discovering a new species.

- If you discovered a new species of insect what would it look like?
- What does the insect eat?
- Where does it live?
- What kind of body parts does it have? (Pincers, colorful wings, strong legs, etc)



WHY SHOULD WE LOVE BUGS? SUMMER CAMP



DAY 4 CONT.

SUMMER 2021

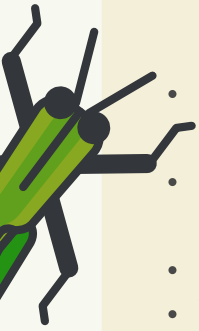


TOPIC: WOMEN IN ENTOMOLOGY

DAILY SCHEDULE: 9AM-12PM

GAME/EXPERIMENT: 11:20AM-11:40AM

- Provide art supplies for students to draw an "undiscovered insect".
- Have students draw what they think an undiscovered species would look like.
- Students can use their ideas from the previous section.
- When students have completed their drawing, they can share details about it. Students can name their insect.
- If there are a lot of students, ask them to share the name of their insect and its coolest feature.



WRAP UP: 11:40AM - 12PM

- Revisit the women entomologists and why they are famous.
- Ask students to share which entomologist they like the most.
- What kinds of things can entomologists be famous for?
- If there is time available, students can share more details about their insect.



WHY SHOULD WE LOVE BUGS? SUMMER CAMP



RESOURCES

SUMMER 2021



CAMP RULES

ONE RULE TO RULE THEM ALL: BE KIND!

- Do not hurt others with words or actions.
- No pushing, hitting, etc.
- Listen when others are speaking.
- Wait your turn to answer questions.
- Stay with the group.
- Be kind to nature (don't pick flowers unless instructed, be kind to insects)

BOOKS

- *The Bug Girl* by Sophia Spencer
- *I Like the Outdoors...What Jobs are There?* by Carron Brown
- *I Like Animals...What Jobs are There?* by Steve Martin
- *Mrs. Peanuckle's Bug Alphabet* by Mrs. Peanuckle and Jessie Ford
- *Bug Hotel* by Clover Robin
- *Some Bugs* by Angela DiTerlizzi

EXPLORING OUTDOORS

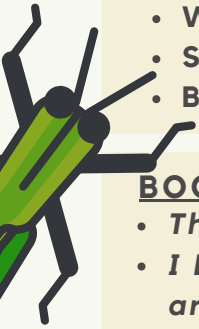
- Be kind to plants and wildlife.
- Treat science tools and materials with care.
- Do not handle or collect stinging insects.
- Leave no trace.

USEFUL VIDEOS

- Head, Thorax, Abdomen Song:
<https://youtu.be/1jODQuci2Sw>
- How do insects breathe?:
<https://youtu.be/vg5GunUjSM8>
- Earwigs:
<https://www.youtube.com/watch?v=95BgMEsYtdY>
- Women in Entomology:
<https://entomologytoday.org/tag/famous-female-entomologists/>
- What is an entomologist?:
<https://www.youtube.com/watch?v=Q-38ocCB0ss>

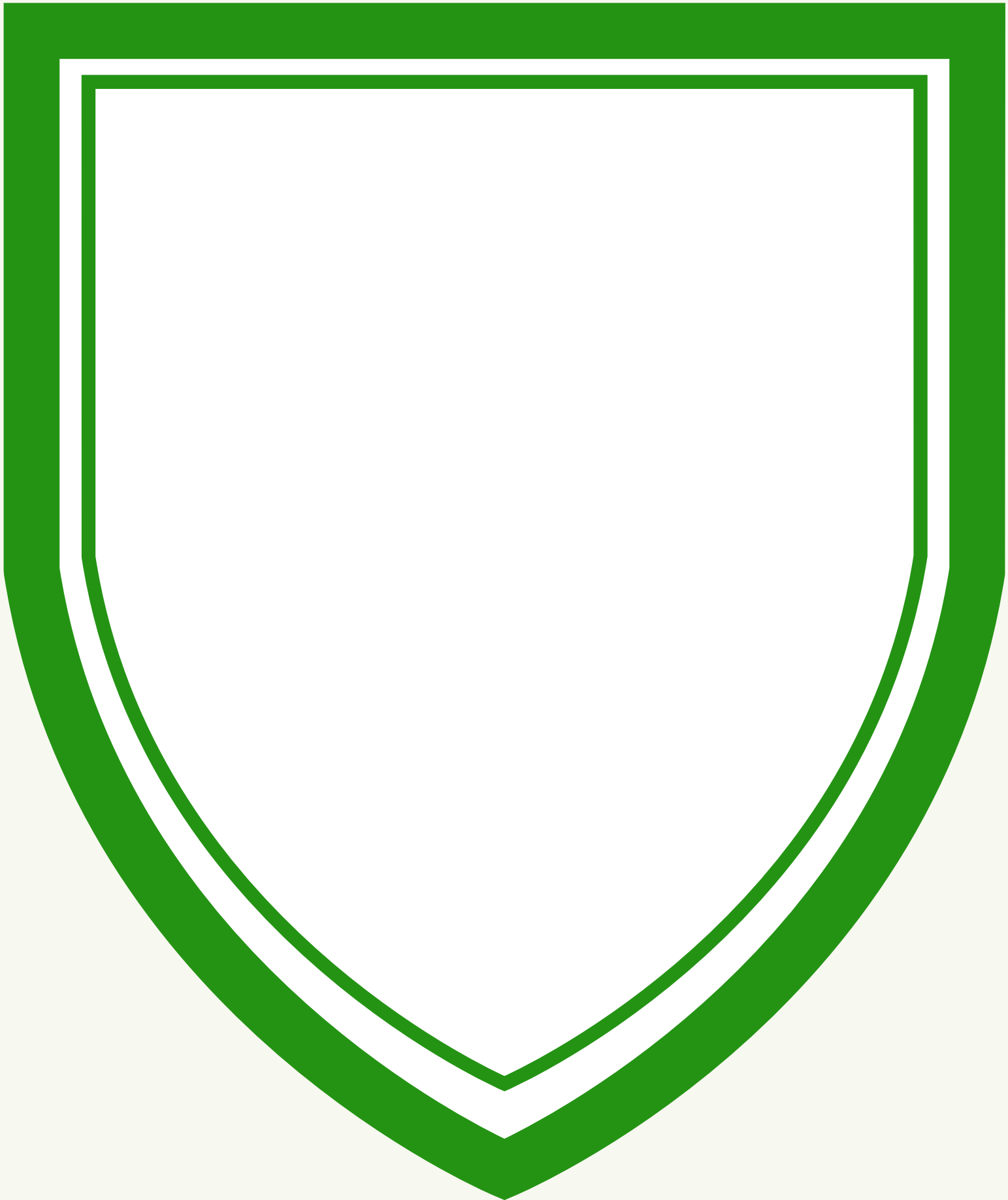
QUESTIONS FROM "THE BUG GIRL"

- Does everyone like bugs? Is it ok to dislike bugs?
- Have you ever made friends with a bug?
- How do you think Sophia felt in Kindergarten when her friends and classmates did not mind that she liked bugs and even thought her facts were cool and awesome?
- Were Sophia and her Mom being kind to the bugs they set free from their house?
- How did Sophia feel in first grade when the kids did not think her bug facts were cool?
- How did Sophia feel after her grasshopper was stomped?
- How could Sophia's classmates have been kind to her even if they were not interested in her bug facts or liked her bug shirt and grasshopper?
- How did Sophia feel after she started hearing from all the entomologists?



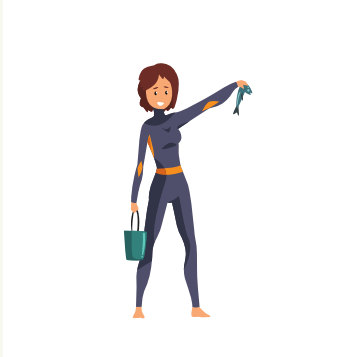
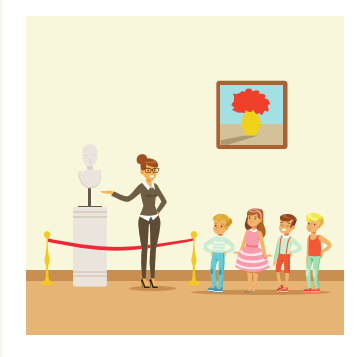
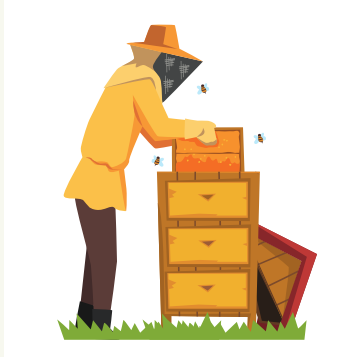
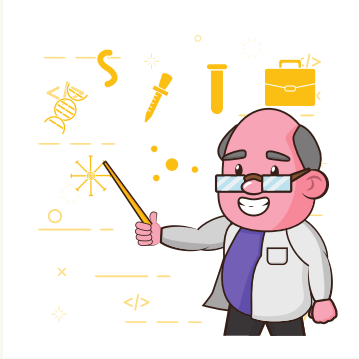
JUNIOR RANGER NATURE BADGE

DAY 2 - OUTDOOR EXPLORATION



NATURE/SCIENCE CAREER BINGO CARD

DAY 2 - GAME

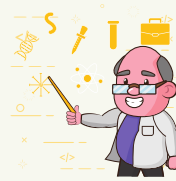


NATURE/SCIENCE CAREER BINGO CLUES

DAY 2 - GAME



Biologist
I study life science including plants and animals.



Science Teacher
I teach science to children and adults in a public or private school setting.



Naturalist
I am an informal educator who teaches about plants and animals.



Geologist
I study rocks to learn about the history of the Earth.



Scuba Diver
I swim underwater to study ocean animals.



Archaeologist
I study bones and tools of ancient civilizations.



Park Ranger
I work in state and national parks to teach people about nature.



Adventure Guide
I lead people on camping trips, long hikes, rafting trips and more.



Zookeeper
I take care of exotic animals in a zoo.



Nature Photographer
I travel to exotic places to take pictures of nature.



Farmer
I plant and harvest crops for food and fuel.



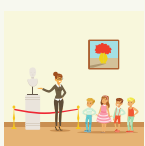
Animal Trainer
I work with animals to teach them how to do a variety of actions.



Veterinarian
I take care of animals when they are sick.



Entomologist
I study and teach about insects in the wild and in the lab.



Museum Director
I take care of and manage museum programs and artifacts.



Beekeeper
I raise bees to harvest honey.