



FIELD GUIDE





WELCOME TO COSI CAMP-OUT!

For 48 years, campers have flocked to COSI to spend a night in the museum and experience the hands-on learning and fun that makes COSI so special. Because many of us are unable to Camp-IN this year, we invite you to Camp-OUT with us, virtually!

At COSI Camp-Out, you'll learn about the natural world and the stars above us, make a tasty snack, hear a camp story, do some hands-on science and crafts, meet some animal friends, and dance the night away!

So grab your supplies, gather around the "campfire," and join us for camp like you've never experienced it before!



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PROGRAM SCHEDULE

COSI Camp-Out is 100% virtual! Visit cosi.org/camp-out at 7:30pm on Friday, August 14 to view the program and join the fun!

7:30pm - COSI Camp-Out Activities

- ▶ Mess Hall Snacks
- ▶ Sports and Science with the Columbus Crew
- ▶ Camp Crafts
- ▶ Science Lab
- ▶ Animals of the Forest
- ▶ Campfire Story
- ▶ Plants and Pollination
- ▶ The Night Sky

Immediately after program concludes

- ▶ Songs around the campfire with Brian Douglas Day
- ▶ Dance party with DJ Dayna

SUPPLY LIST

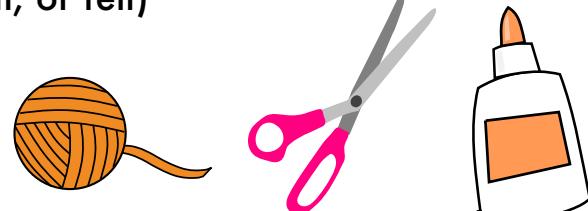
Gather these supplies before the program begins to follow along with COSI Camp-Out activities and experiments

Mess Hall Snacks – choose which snack you would like to make!

- Classic S'mores – graham crackers, marshmallows, chocolate bars
- S'mores Trail Mix – mini chocolate chips, mini marshmallows, and graham cracker sticks (or graham cereal, mini vanilla wafer cookies, or mini graham cookies)
- Spreadable S'mores – graham crackers, marshmallow fluff, chocolate hazelnut spread

Camp Crafts

- Flag base (Construction paper, craft foam, or felt)
- Scissors
- Paper straw
- Yarn/string
- Decorating materials (stickers, markers, glitter, pom-poms, glue, tape, etc.)



Science Lab

- A clear cup or jar (plastic or glass)
- Water
- Shaving cream or Whipped Cream
- Food coloring (or some watercolor paint mixed with water)
- Pipette, dropper, or straw



MESS HALL SNACKS: S'MORES TREATS!

Supplies:

- Classic S'mores – graham crackers, marshmallows, chocolate bars
- S'mores Trail Mix – mini chocolate chips, mini marshmallows, and graham cracker sticks (or graham cereal, mini vanilla wafer cookies, or mini graham cookies)
- Spreadable S'mores – graham crackers, marshmallow fluff, chocolate hazelnut spread

Classic S'mores

Grab your favorite adult to help you make an ooey-gooey s'more!

- ▶ Campfire – toast the perfect marshmallow over a campfire, and make a sandwich with graham crackers and a square of chocolate.
- ▶ Microwave – on a microwave-safe plate, place a graham cracker square and top with a square of chocolate and a marshmallow. Microwave for 15 seconds, or until your marshmallow starts to puff up. Remove from microwave, top with another graham cracker, and eat up!

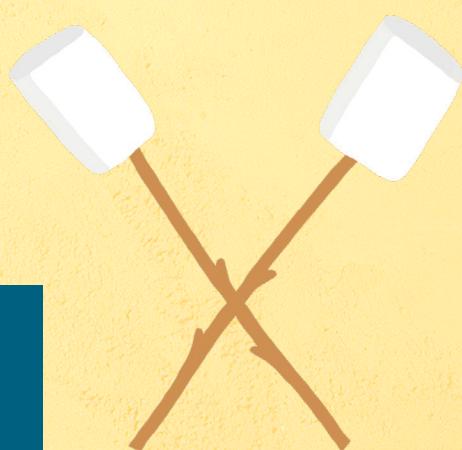
S'mores Trail Mix

Mix together mini chocolate chips, mini marshmallows, and graham cracker sticks (or graham cereal, mini vanilla wafer cookies, or mini graham cookies) to create a delicious s'mores trail mix – no campfire required!

Spreadable S'mores

Spread layers of marshmallow fluff and chocolate hazelnut spread onto graham cracker for a super sticky, delicious s'more treat!

Mix it up! What else can you add to your s'more treats? Try adding bananas, pretzels, dried fruit, or peanut butter for a fun and delicious twist!



SPORTS AND SCIENCE WITH COLUMBUS CREW SC

What are your answers to the questions we asked Columbus Crew players?
Do your answers match any players' answers?

- ▶ How fast do you think a soccer ball can be kicked?
- ▶ What is your favorite thing to do in Columbus and at COSI?
- ▶ If you were a scientist, what type of scientist would you be?
- ▶ How far can a midfielder run during a soccer game?

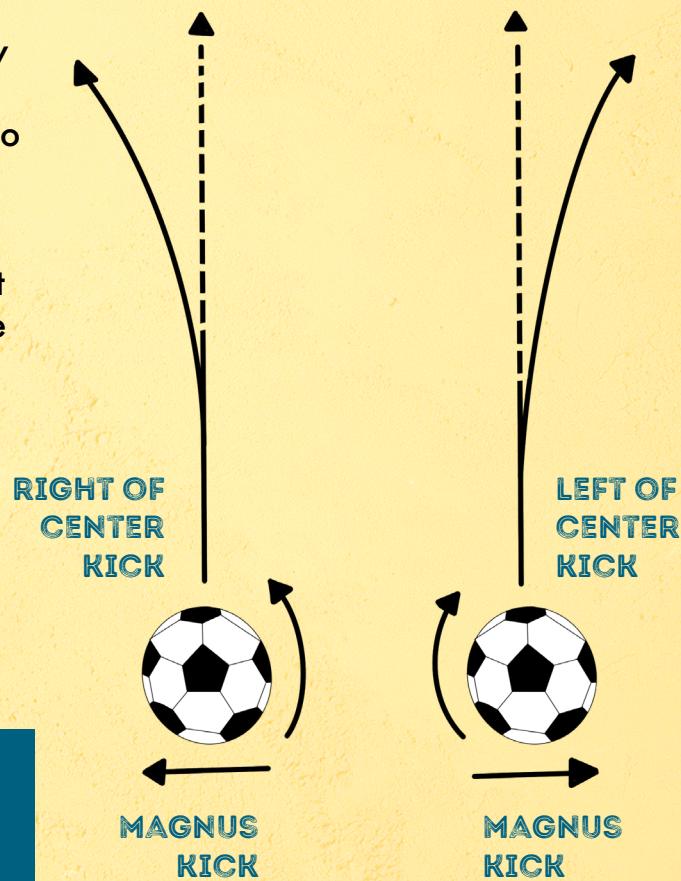


Soccer and Physics

Soccer may seem like just a fun game, but it's full of science! The movements of a soccer ball and a player in motion are great examples of physics and the laws of motion.

Putting spin on a ball is an important part of many sports, including baseball, basketball, football, and soccer. Have you seen a soccer ball curve into the goal? This is called the Magnus Effect, or a "banana kick."

When a soccer ball is kicked off-center, it will not only send the ball into motion, but also cause the ball to spin rapidly during its flight. This rotation of the ball causes the air around it to deflect differently on one side of the ball than on the other. For example, if more air is pushed to the right, it will cause the ball to deflect left, putting a curve on the trajectory of the ball. In other words, the ball will change direction!



Try it at home! Can you make a ball curve with a Magnus Force? Try kicking the ball in different places and see how that affects the path of the ball. Does kicking the ball at the bottom left and top left send the ball in different directions? How about the bottom left and bottom right?

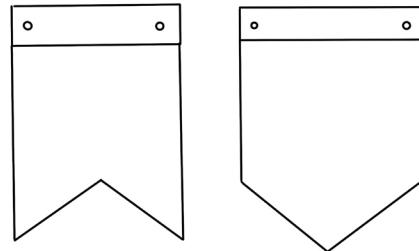
CAMP CRAFTS: MAKE A CAMP FLAG!

Did you know that the study of flags is called “vexillology”? The first flag was likely invented in what is now China in the Zhou Dynasty (1046-256 BCE).¹ Today, flags use colors and symbols to represent land ownership, cultures, religions, and groups of people. How will you design your flag to represent you?

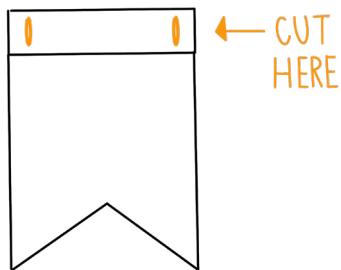
Supplies:

- Flag base (Construction paper, craft foam, or felt)
- Scissors
- Paper straw
- Yarn/string
- Decorating materials (stickers, markers, glitter, pom-poms, etc.)

Take your flag base craft and trim the bottom into a shape you like. Traditional camp flag shapes look like this.



Using scissors, cut 2 small vertical slits at the top of your flag, one on either side about $\frac{1}{2}$ inch from the corner.



Slip the paper straw through the right slit from behind, and then push it across the front of the flag until you get to the other side. Push the paper straw through the front of the second slit, and adjust so that it's centered.

Take a long piece of yarn or string and thread it through the straw. Bring the ends together and tie into a knot so that you can hang your flag up.

Decorate your flag to represent you! You could add your name, your favorite animal, your favorite COSI exhibit, and more!

SCIENCE LAB: RAIN CLOUD

Clouds are formed when there is a significant change in pressure and in temperature. Air that has been heated near the earth begins to rise into the atmosphere. As it rises, air pressure and temperature decrease, and the water molecules in the air start to condense onto the dust particles in the air. Eventually, all this dust and water vapor will form a cloud! But the cloud can only hold so much water vapor. As the cloud gets saturated and heavy with water, gravity pulls the extra water back down to the earth in the form of rain.ⁱⁱ

In this demonstration, we are modeling what happens when a cloud is saturated with water and releases water in the form of rain. The cloud is represented by the shaving cream, and the rainwater is represented by the food coloring or colored water.

Supplies:

- A clear cup or jar (plastic or glass)
- Water
- Shaving cream or Whipped Cream
- Food coloring (or some watercolor paint mixed with water)
- Pipette, dropper, or straw

Fill the clear cup or jar with water until it is about half full.

Create a cloud by squirting shaving cream on top of the water.

Using the pipette, dropper, or straw, squirt drops of food coloring or watercolors onto the top of the shaving cream "cloud."

Count how many drops it takes until it starts to "rain" from the bottom of the "cloud."

You can make a mini version of this activity with just a cotton ball and some water! Count how many drops of water your cotton ball "cloud" can hold before it gets too saturated and heavy with water and "rain" begins to fall.



ANIMALS OF THE FOREST

Virginia Opossum

- Opossums are the only native North American marsupial (mammals that carry their babies in a pouch until they are big enough to live on their own).
- Opossums are opportunistic, and will eat almost anything and find shelter almost anywhere. This means that they adapt easily to living in many different environments, from woods and farms to cities and suburbs.
- Opossums have a prehensile tail that can grasp and wrap around things like tree branches, and a special "thumb" called a hallux. These two body parts make the opossum a great climber!
- The opossum has been around for at least 70 million years and is one of the oldest mammals.



Eastern Box Turtle

- The Eastern Box Turtle gets its name from the unique dome shape of its shell
- If they are not killed by predators, Eastern Box Turtles can live up to 100 years!
- Unlike other turtles, the Eastern Box Turtle does not have the webbed feet or flattened shells that assist in swimming. Instead, they are built more like tortoises.
- The Eastern Box Turtle lives on land, preferring wooded areas where they can find slugs, earthworms, fungus, and leafy plants to eat.ⁱⁱⁱ



Eastern Screech Owl

- ▶ Eastern Screech Owls can often be found in forests, since they prefer to nest in the cavities of large trees, but they will accept almost any place that has enough trees, like parks and orchards.
- ▶ Their mottled feathers provide excellent camouflage. An Eastern Screech Owl will freeze in place if it feels threatened, hoping that its feathers will make it look like the bark of a tree.^{iv}
- ▶ Are Eastern Screech Owls secret Buckeye fans? They might be, because they have 2 different color phases – scarlet and gray!



- ▶ Want to make a home for an Eastern Screech Owl? You can build a nest box and place it near a wooded area. Visit nestwatch.org to get more details about how to build a nest box and where it should be placed, or use the following instructions.

BUILD A NEST BOX

**American Kestrel,
Screech-Owl,
Northern Saw-whet Owl,
Boreal Owl, Bufflehead**

SUPPLIES NEEDED:

Use raw pine or cedar. Do not paint or treat with a wood preservative.

An outside perch is not necessary and may attract other species to the box.

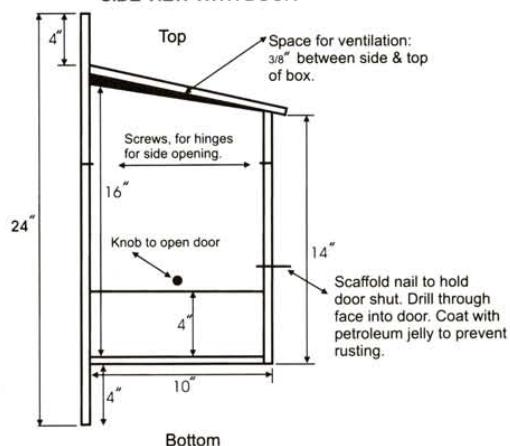
Use 1-5/8" galvanized deck screws for the box.

You can place a perch inside (using cutout from entrance) about three inches below entrance hole.

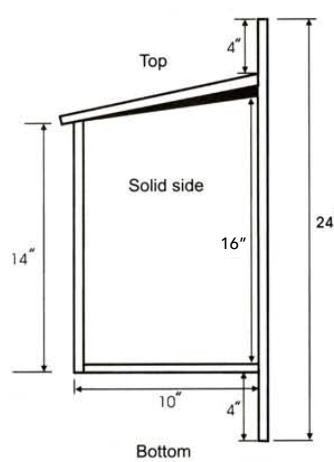
Place 2" of coarse wood shavings (not sawdust) in bottom of box, each year before nesting season.



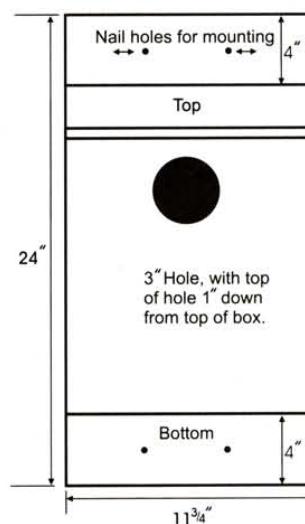
SIDE VIEW WITH DOOR



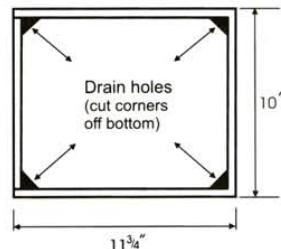
SIDE VIEW OTHER SIDE OF BOX



FRONT VIEW OF BOX



BOTTOM OF BOX



Bottom is inset into sides of box.

PLANTS AND POLLINATORS

Plants and pollinators are all around us, working together to make sure that plants keep growing healthy and strong.

Pollination is an essential part of the life cycle of a plant, and is necessary in order for plants to grow seeds and fruits. Pollination occurs when grains of pollen travel between two plants, and often with the help of animals and insects. These pollen-movers are called pollinators, and are creatures like bees, butterflies, birds, and even small mammals. Around 75% of plants need an animal pollinator to help them reproduce! Plants attract pollinators by rewarding them with things like food (pollen and nectar) and shelter, and often are brightly colored or have scents that are especially attractive to pollinators.⁴

What native plants and pollinators can you find in your backyard, in the park, and in natural areas around you?

Use the check-list on the following page to identify the pollinators in your neighborhood!





HONEY BEE



BUMBLE BEE



LADYBUG



DOGBANE TIGER
MOTH



MONARCH
BUTTERFLY



SWALLOWTAIL
BUTTERFLY



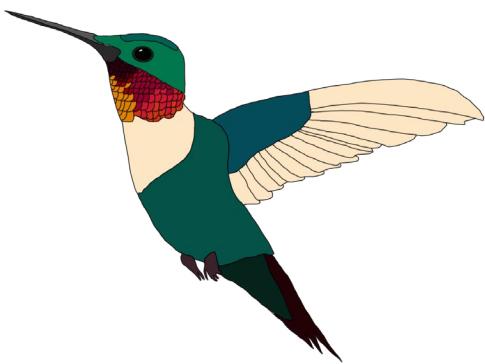
PURPLE
CONEFLOWER



SUNFLOWER



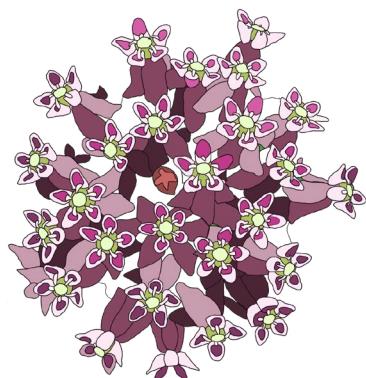
ZINNIA



RUBY THROATED
HUMMINGBIRD



GOLDENROD

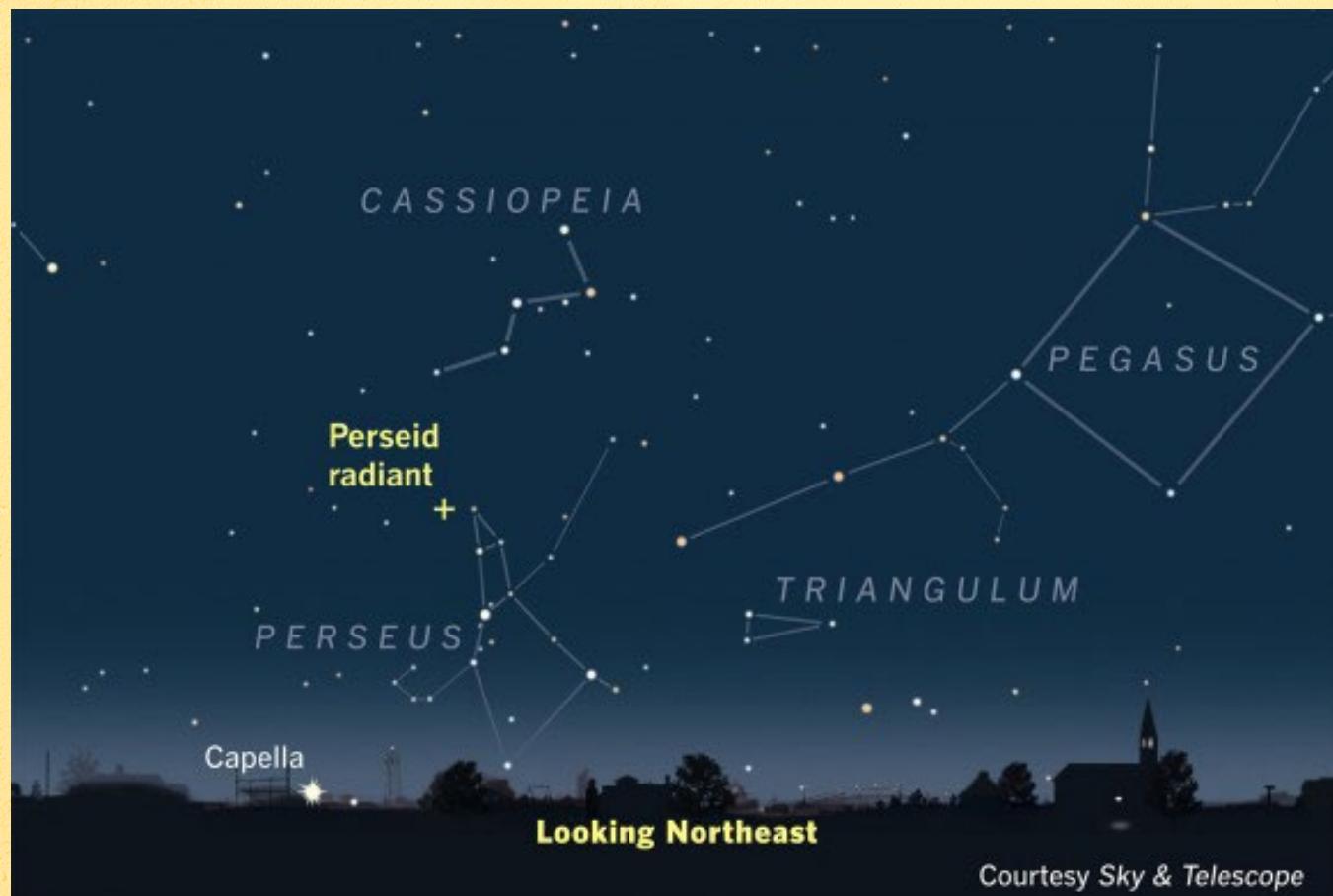


MILKWEED

THE NIGHT SKY

This week, the Perseid meteor shower is visible. If you want to try and spot it for yourself, try these tips for great viewing!

- ▶ Get away from street lights, lights from businesses and residences and find a wide section of dark, open sky
- ▶ Give yourself plenty of time – it can take your eyes at least 20 minutes to adjust to the dark, and meteors often come in groups with pauses in-between
- ▶ The Perseid meteors all come from a point in front of the constellation of Perseus. If you can find the constellation, you'll know where all the meteors are coming from
- ▶ The meteors can be seen best between 2:00am and dawn, but you'll be able to see some starting around 9:00pm
 - In the evening hours, you may get lucky and see a rare earthgrazer meteor – a long, slow meteor that travels horizontally across the sky
- ▶ At the peak viewing times, you may see as many as 40 meteors an hour^{vi}



Courtesy Sky & Telescope

THANK YOU FOR JOINING US AT COSI CAMP-OUT!

COSI has played an important role in our community for five decades, providing exciting and engaging hands-on learning opportunities for those of all ages. That commitment has not wavered. Science matters now, more than ever, and COSI remains dedicated to providing science education and learning to all. If you can, please consider donating to COSI to help us continue to make programs like COSI Camp-Out accessible to all, and fulfill our mission to engage, inspire, and transform lives and communities by being the best partner in science, technology, and industry learning.

To learn more about COSI, or to donate, please visit www.cosi.org.

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ⁱ Encyclopedia Britannica
ⁱⁱ NASA Climate Kids
ⁱⁱⁱ Ohio History Central
^{iv} Columbus Audubon

^v Ohio State University College of Food,
Agricultural, and Environmental Sciences
^{vi} Earthsky.org