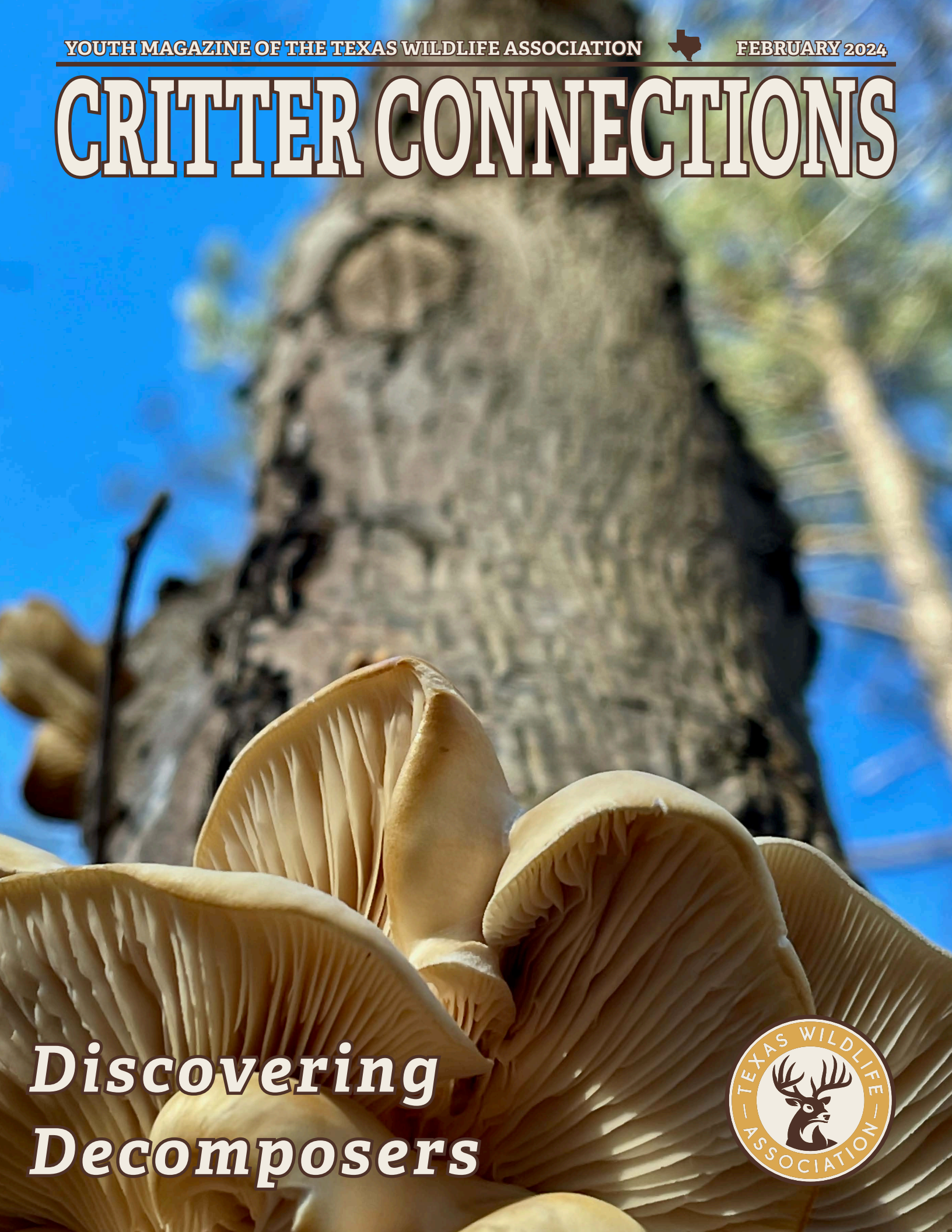




# CRITTER CONNECTIONS



*Discovering  
Decomposers*





# Texas Star Mushroom



Texas Star mushroom

Mushrooms may look like a plant, but they are not considered one. This is because they do not have chlorophyll, the green color found in plants that allows them to create their own food using sunlight in a process called photosynthesis. This is a trait unique to plants. Because mushrooms do not contain chlorophyll and cannot use photosynthesis to create food using sunlight, they are not classified as plants. Mushrooms are a type of fungi and rely on dead plants and animals as their source of food. We have a pretty neat mushroom in our state - the



Texas Star mushroom

Texas Star mushroom, scientific name *Chorioactis geaster*.

The Texas Star mushroom is native to our state. This mushroom is rare. It is only found in Texas, small parts of Oklahoma, and almost 7,000 miles away in Japan! Scientists are not sure why this fungi is only found in these two countries, but have discovered through research that they have been separated for at least 19 million years! The Texas Star mushroom was named our official State Mushroom in 2021, making Texas the third state to have an official state mushroom. When named the official state mushroom, these critters were reported in nine counties of Texas but now may be in as many as sixteen, per Fort Worth Botanic Garden. You can find these critters in select counties within North and Central Texas.

This mushroom can be found during the cooler months, beginning in late fall. It grows into a dark brown capsule about 3 to 4 inches long that looks kind of like a cigar. That is why it has the nickname "Devil's Cigar." Once it is fully grown, it will split open from the top into 4 to 8 tan and white points, forming a star-like shape. As the mushroom opens, it releases its spores into the wind. Spores are the mushroom's seeds. If you are around when the mushroom opens, you can hear a hissing noise as it releases the spores in a puff of smoke. How neat!

This mushroom only grows on Cedar Elm roots and stumps in Texas and breaks down these trees for food. As it breaks down the trees, it creates soil and recycles nutrients that act as a fertilizer for nearby growing plants. What a hardworking critter!



Capsule

#### References

Fort Worth Botanic Garden: <https://fwbg.org/phytophilia-blog/texas-star-mushroom/>

Photos by Mason Lalley, Tim Jones, TXPhilistine

Cover photo by F Delventhal

## Make a Mushroom

For this activity you will need an empty paper towel or toilet paper roll, paper bowl or cup, markers or paint, glue and paper.

**Step one:** Research Texas mushrooms. Pick a species native to our state. You will use this mushroom as a reference for your craft.

**Step two:** Turn your paper bowl or cup upside down. This will be the top of your mushroom. Color the bowl or cup to match the mushroom you found in your research.

**Step three:** Color your paper towel or toilet paper roll. Glue the roll to the inside of your bowl or cup. This will be the stem of your mushroom.

**Step four:** Using another piece of paper, write some facts about your mushroom that you learned through your research.

Choose another native Texas mushroom and follow steps 2-4 again to create your own fungi forest!



Deer Mushroom and Wood Blewit craft

# Did you know...



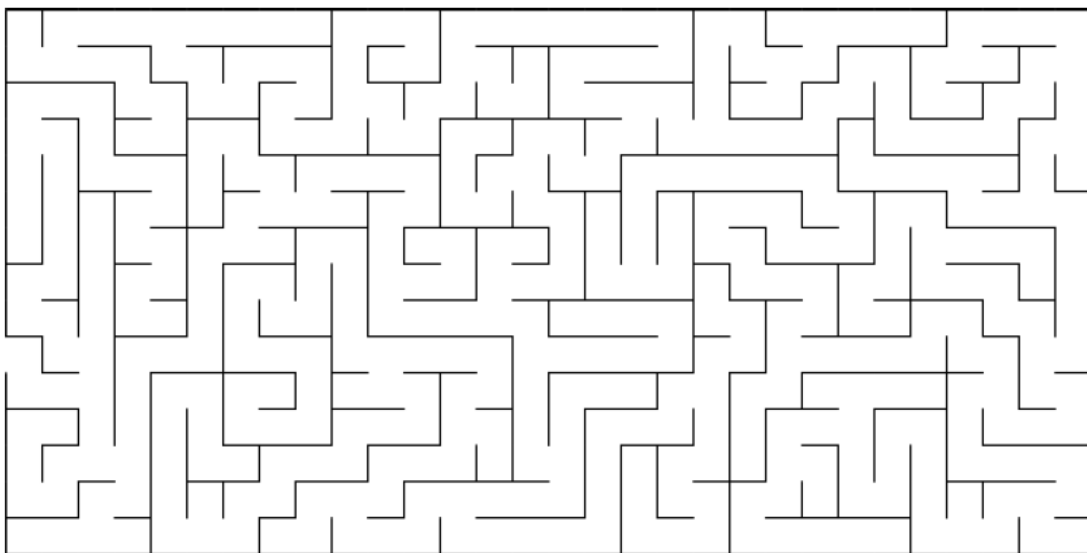
- ...that Texas' official state mushroom is the Texas Star mushroom?
- ...that Texas was the third state to name an official state mushroom?
- ...that the Texas Star Mushroom hisses when it releases its spores?
- ...that without decomposers we'd be surrounded by dead leaves and animals?
- ...that decomposers are essential to ecosystem health?
- ...that some decomposers can only be seen through a microscope?
- ...that worms are very important to soil health?
- ...that invertebrates are organisms that do not have backbones?
- ...that food chains are the series upon which organisms depend on each other for food and energy?



Photo by Tim Jones

## Worm your way to the leaves

Help the worm tunnel through the soil to find its food, the fallen leaves!



Activity source: Maze- Discovery Education Puzzlemaker  
Art: Amber Brown



# Discovering Decomposers



By Amber Brown

Have you ever seen a worm wiggle in the dirt and wondered why it's there? What about beetles walking through the leaves on the ground or mushrooms growing on the trunk of a fallen tree? While it may not seem like it, these different **organisms** all have something very important in common. They are all decomposers, a living thing that breaks down decaying, meaning rotting, plant and animal materials, waste and even garbage.

While decomposers have a dirty job, they are very important to our environment because other living things depend on them. To understand their importance, we need to learn the flow of energy in an ecosystem. A great way to learn about the flow of energy in an ecosystem is to study the food chain. Food chains are the series upon which organisms depend on each other for food and energy.

Food chains begin with the sun. The sun provides energy to all life on our planet. Plants turn sunlight into energy using **photosynthesis**. Plants, called producers, are the first link in the food chain. Producers are eaten by consumers. Consumers can be herbivores, carnivores or omnivores. Herbivores are animals that eat mostly plants, like deer and rabbits. Carnivores are animals that eat mostly meat, like bobcats and hawks. Omnivores are animals that eat both plants and meat, like bears and raccoons. The last link of the food chain are decomposers. When plants and animals die, they become food for decomposers. Decomposers get their energy from consuming, or eating, dead plant and animal materials and waste.

As they eat, they **recycle** these materials and turn them into nutrients that plants can absorb. Nutrients are the substances like nitrogen,



Decomposing leaf

phosphorus and potassium that help plants grow. As new plants grow, the food chain begins again.

Now that we understand the flow of energy in an ecosystem, we can begin to picture why decomposers are so important. Think of decomposers as our environment's clean up crew. They remove dead materials and waste by using it as a food source. In the process, they break the materials into smaller and smaller pieces, creating soil and providing nutrients for the plants around them. Close your eyes for a moment and imagine a world where we do not have decomposers. What did you see? Without decomposers, we would be surrounded by rotting plants, animals and waste that would have nowhere to go. The dead materials would begin to pile up, and we would lose nutrients that are important to our ecosystems. What a smelly situation!

The word decomposer is used to describe many types of organisms. They can be all shapes and sizes like mold, flies and beetles. There are four major categories of decomposers - insects, invertebrates, fungi and bacteria, and they each play different roles in the decomposition process.

Some insect decomposers we have in Texas include critters like the maggot, fly, dung beetle and pill bug also known as roly-pollies. These insects help break down decaying material by consuming, or eating, it. They will snack on decaying plants, animals and even **excrement!**



Dung beetle

Invertebrates are organisms without backbones, like slugs and snails. You have likely seen an invertebrate decomposer without realizing it! A neat invertebrate decomposer we have in Texas is the earthworm. These critters live underground and eat the dead plant and animal materials within our soil.

Earthworms can eat up to one third of their body weight per day! Their waste is full of nutrients that plants use to grow. Worms are also very beneficial to the soil. As they move around in the soil, they mix in their nutrient rich waste. Additionally, the tunnels they create



Earthworm

when moving bring oxygen into the soil, help with water drainage and make room for plant roots to grow.



Finally, bacteria are the smallest decomposers. You would need a microscope to see them in action! Some bacteria take the dead materials and nutrients that the insects, invertebrates and fungi provide and break them down further, making them easier for plants to use when growing.

Decomposers may not be the prettiest organisms in our state, but they have a very important job. They are the last link of the food chain and keep the nutrients flowing throughout our ecosystems. Without them, we couldn't grow plants like gardens and crops. Next time you're outside, take a moment to admire all the work our tiny, strange friends do.



Turkey Tail Mushroom

Fungi are another type of decomposer. While they may look like a plant, they are far from it. They are so different that they make up their own **Kingdom** of life! Fungi can be organisms like mold, mildew and one we are all familiar with - wild mushrooms. We have many wild mushrooms species, or types, in Texas like the Texas Star mushroom, the Oyster mushroom, Puffball mushroom, Chanterelle mushrooms, Turkey Tail, Deer mushrooms and even some with funny names like the Jelly Fungi.

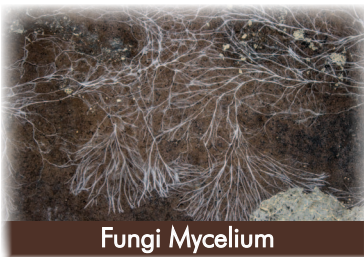


Pill bugs and snails



Jelly Fungi

We actually only see small parts of the mushroom. Mushrooms are connected by an underground network of roots that can sometimes stretch for miles, called **mycelium**. The parts we see are just the fruit, kind of like apples on a tree. Mushrooms can be found on the ground or in rotting material like trees, leaves and sometimes even excrement and turn it into rich soil for plants to grow, receiving energy in the process. Some wild mushrooms can be harmful to humans, so look but don't touch!



Fungi Mycelium

### WORD BANK

**Organisms**- any living thing

**Photosynthesis**- the process green plants use to turn sunlight into food

**Recycle**- turning materials into something new

**Excrement**- waste matter from the body

**Kingdom**- a classification of organisms made up of five main groups

**Mycelium**- network of threadlike strands that make up the main body of a fungus, typically underground

#### References

National Geographic Kids- Earthworm:  
<https://kids.nationalgeographic.com/animals/invertebrates/facts/earthworm>  
 National Geographic Kids- Decomposers:  
<https://education.nationalgeographic.org/resource/decomposers/>

Photo Sources: Pablo Gonzalez, Alyson Hurt, Jolynne Martinez, pfly, Carol Jacobs-Carre, John Munt, Monikah Schuschu, cygnus921

# Word Find

A J J O F V Y I A T C F F Q L  
F X D S U E B J I D H I H A A  
I O S J N N H I R G L M S D R  
M W O R G N V I E U I Z Q E E  
M O P D I H N I T B I Q S Q L  
C Q O K C S A Z C L B O C B C  
S W J R E H I Q A L P I O W Y  
D W E C H C A Z B M U G M J C  
A T T Y J S D I O K N J B Q E  
D S X C K Y U C N R T K E L R  
Z H J E Y Z E M L W K Z F P O  
C L Z A P D C J P H N D S W M  
S E T A R B E T R E V N I R B  
H M K S H N N F Q E U P O C U  
G A I E P R F F L Y E W F Z R

## FIND THESE WORDS:

- Bacteria
- Decomposer
- Fly
- Food Chain
- Fungi
- Insects
- Invertebrates
- Mushroom
- Recycle
- Worm

Activity source: Discovery Education Puzzlemaker



## Nancy's Corner



Now that you have learned about decomposers and the role they play in our ecosystems, see if you can spot them in the wild! Take a walk outside and observe your surroundings. Remember, good stewards observe their surroundings but do not touch or disturb them. Write down what you find in your field journal or in the space below. Use the following prompt to get started:

What kind of decomposer did you find? Draw it and describe what it looks like. What role does it play in its ecosystem? How does this decomposer interact with the other organisms in its ecosystem? How does it benefit the world around us?



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# Formal Education Programs

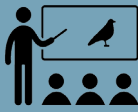
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## Critter Connections

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## Educator Workshops

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