

Information for Teachers

The following resources were developed to support your learners in their exploration of teeth and the different types of food that animals eat.

Resources:

- Lesson Plan: Animal Adaptations: Tusks
- Images for Lessons

Larger image resources for lessons can be found at the end of this document. All images were found under creative commons license, images purchased from Canva, or from the Smithsonian Early Enrichment Center's private collection.



Animal Adaptations: Tusks

We often talk to children about the importance of being flexible and adapting to new situations. This lesson about mastodons focuses on how physical adaptations help animals live in different environments.

Children will compare the body parts of a mastodon to those of a modern-day elephant, observe similarities and differences, and make predictions about why these traits changed from the Ice Age period to the present day. Children will then experiment with different tools to dig in frozen soil and draw conclusions about why larger tusks helped the mastodons during the Ice Age.

By observing and predicting, children are practicing their critical thinking skills and gaining deeper understandings than if they were simply told the answer.

OUTCOMES

After participating in this "look, talk, experiment, play" activity, children will be better able to understand how teeth, specifically tusks, can be an adaptation that helps animals to survive in different situations.

OBJECTIVES

During this activity, students will:

- Compare a familiar animal (an African elephant) with an unfamiliar animal (an American mastodon)
- Learn that tusks are a special kind of teeth
- Explore how differently shaped tusks allow animals to eat food in different climates
- Identify and communicate similarities and differences and predict why some traits are better for specific environments
- Discover that physical adaptations help animals live in different environments

STANDARDS ADDRESSED

This lesson supports the following Early Learning Outcomes Framework (ELOF) standards:

- Goal P-SCI 2. Child engages in scientific talk.
- Goal P-SCI 3. Child compares and categorizes observable phenomena.
- Goal P-SCI 6. Child analyzes results, draws conclusions, and communicates results.

MATERIALS

- Printouts of images on pages 11-18 for students to observe and discuss
- Paper plates
- 2 containers (sensory bins, 9x12 baking pans, etc.)
- Soil
- Water
- Baby spoons
- Garden trowels
- Sensory bins

- Ice cubes
- Larger blocks of ice, if possible
- Sand/water tools (scoops, cups, buckets)
- Toy animals from a variety of climates
 - Examples include: polar bears, lizards, lions, penguins, elephants, pandas

LESSON ACTIVITY SUMMARY

- **Look:** Look closely at and compare an elephant and a mastodon, focusing on the tusks.
- **Talk:** Talk about how mastodons are adapted to living in cold climates, while elephants live in tropical and subtropical climates. Discover that the mastodon's longer tusks, which are a type of teeth, helped it dig in the ice.
- **Experiment:** Try digging with different tools in frozen soil. Is the larger tool easier or harder to dig with?
- **Play:** Sensory play with ice and plastic animals.



Look Closely at Each Image

- What do you see?
- What do you think?
- What do you wonder?

Essential Questions:

What do you notice about these two animals that is the same?

What do you notice about these two animals that is different?

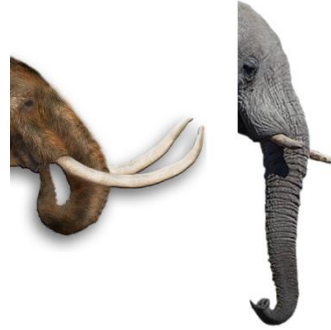
Compare the familiar animal (an elephant) with an unfamiliar animal (American Mastodon)

Are tusks teeth?

How are tusks different from your teeth?

How are tusks the same as your teeth?

What might tusks be used for?



Mastodon



African Elephant



Talk about mastodons and elephants

Mastodons are **extinct**, which means there are no living mastodons today. But they are the distant relatives of the modern elephant, which means that they share some similarities, even though they also have many differences. By comparing the mastodon and the elephant, we can discover how they adapted to live in their unique environments.



Long, Long, Ago

Mastodons were alive long, long ago. They lived 3 million years ago to 10,000 years ago. No mastodons are alive today.

You might not be able to see a real living mastodon, but you can see its fossils and its living relative, the modern elephant.

It can be difficult for young children to understand concepts of deep time. If children have questions and want to learn more, be sure to check out these videos:

- [Learn about Fossils](#)
- [How Do Dinosaur Fossils Form?](#)
- [Make Your Own Fossil](#)



Climate

- Mastodons lived long, long ago during an **ice age**. An ice age is when the world's temperatures are colder and glaciers and snow cover more land. Mastodons had **adaptations** that helped them survive in the cold temperatures. Their bodies were covered in fur, they had long tusks and small ears. Mastodons are no longer alive today. They are

extinct in part because the temperature of the Earth warmed, and the mastodon's adaptations were no longer useful.

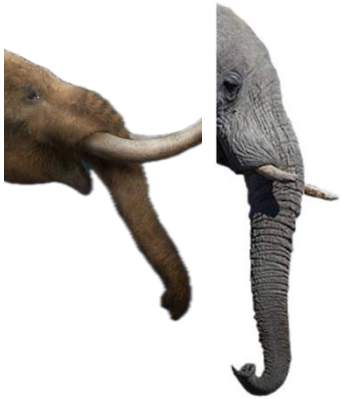
- Elephants are the living relatives of mastodons today. They live in warmer climates throughout Africa and Asia. Elephants look very similar to mastodons in many ways because they are related. Elephants have adaptations that help them live in warm weather like small amounts of hair instead of fur on their bodies and big ears.



Fur

Both elephants and mastodons have hair. (They are both **mammals** and all mammals have **hair**, **fur**, or whiskers.)


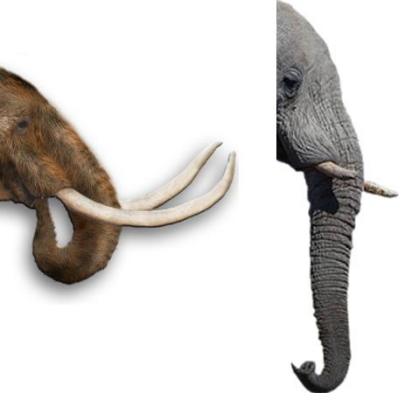
- Mastodons – We know from the preserved bodies that mastodons had **fur**. Fur helps to keep animals warm in cold temperatures.
- Elephants – Elephants have much less hair than mastodons did. They have hair on their tails and some stiff hair on their bodies, but their skin is much less covered than mastodons. When elephants get hot, they are able to expand the pores of their skin so **sweat** can come out more easily, which helps cool them down.



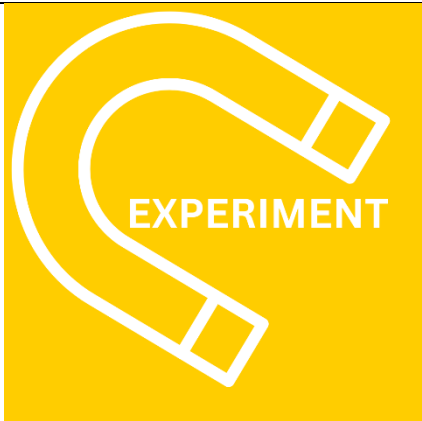
Trunks

Both mastodons and elephants have special kinds of **noses** called **trunks**! Do their trunks look like our noses? Describe the differences. Encourage children to make their arm into an elephant trunk.

Trunks are used for many things. (We can use our "trunks" to act these things out):

	<ul style="list-style-type: none"> • When elephants smell something interesting, they put their trunk up in the air and sniff. • When they get scared, they trumpet. • When they want to show love, they use their trunk to hug. • And when they eat, they use their trunk to pick up food and put it in their mouth.
	<p>Ears</p> <ul style="list-style-type: none"> • Mastodon – Small ears make it easier for the mastodon to stay warm in cold weather. When the blood that is pumped through the mastodon's body goes to its ears, which are not covered by as much fur as the rest of its body, the blood is more exposed to the cold and it cools down, making the body feel colder. Since the mastodon's ears are small, less of its blood cools down. • Elephant – Large ears help keep elephants cool in hot weather. The large ears allow heat to dissipate from the elephant's body. As the blood goes through the thin skin covering the large ears, it cools down. Elephants sometimes put water on their ears to help cool down even more. Another benefit of large ears is that they can act like a fan! Elephants flap their ears to keep them cool. • <u>Experiment:</u> Hold paper plates up to children's ears. Explain that these plates are elephant ears. Have the children flap their paper plate "ears" and observe how they feel.
	<p>Tusks</p> <p>Both elephants and mastodons have tusks. Tusks are actually large front teeth that continue to grow throughout an animal's life. One way that both mastodons and elephants used tusks is to dig in the soil for food to eat.</p>

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| | <ul style="list-style-type: none">• Mastodon – Had larger tusks which could grow up to 16 feet. The mastodon's large tusks helped it dig in the hard, cold (or frozen) soil to find food.• Elephants – Have smaller tusks which can grow up to 8 feet. Elephants live in warm climates where they do not have to dig through frozen soil to find food. |
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Large Tusks Help Dig in Ice

Try this experiment to help children understand why mastodons needed larger tusks than elephants have today.

- 1) Put some dirt and water in a bin in the freezer until the filling hardens.
- 2) Make another container using the same sized bin, amount of dirt, and water, but keep this container room temperature.
- 3) Give children small baby spoons (representing the elephant's small tusks) and gardening trowels (representing the mastodon's large tusks) as tools.
- 4) Let children use the different tools to try to dig in both containers. What tool works better in frozen soil?



Play with Ice

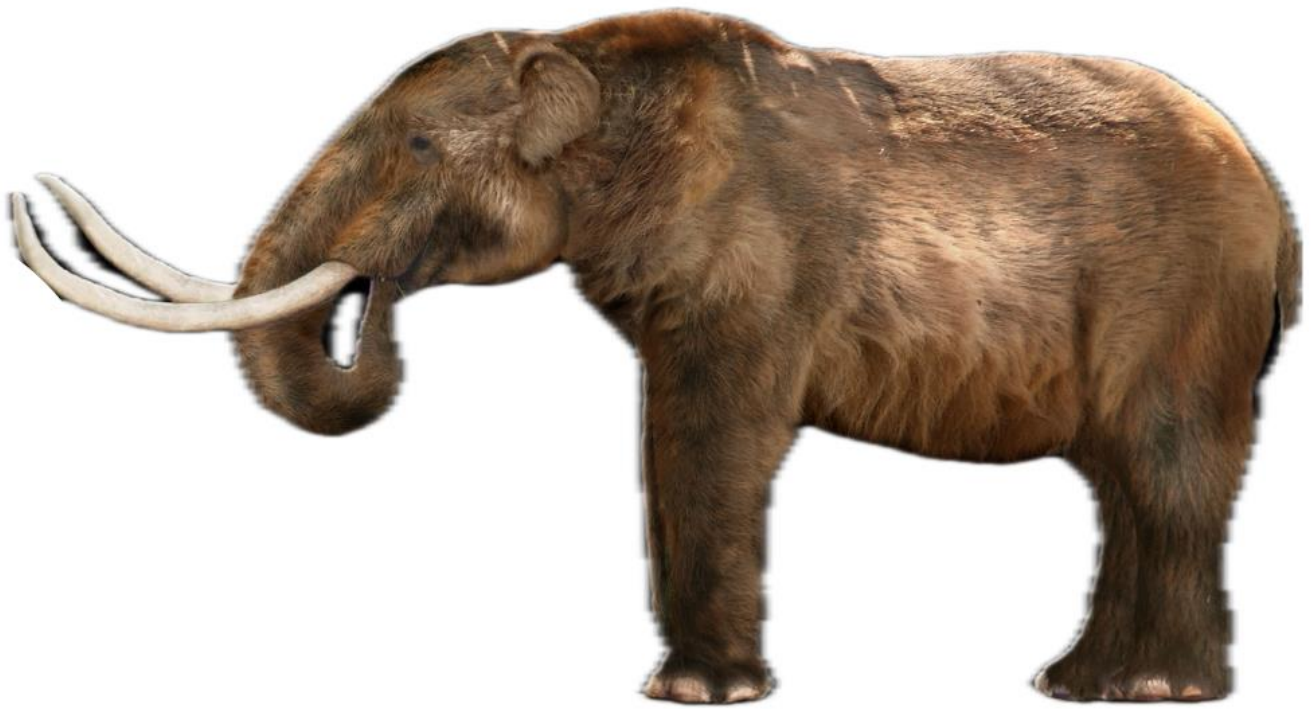
Create a sensory experience for children to play with and explore the ice as they think about our world long ago in the Ice Age.

- 1) Prepare a container with water and ice cubes to make the water cold. You can make the play even bigger by using a child-sized pool!
- 2) Give children time to explore the water with sand/water tools like scoops, buckets, cups, or spoons.
- 3) Ask questions like, "What would it be like to live in a cold place?" and "What would you need to stay warm?"
- 4) Add a variety of toy animals to the play to deepen the learning. Let children sort which animals belong in the cold climate.
- 5) Ask the children: What is special about these animals that can live in the cold? What adaptations do their bodies have to help them survive?





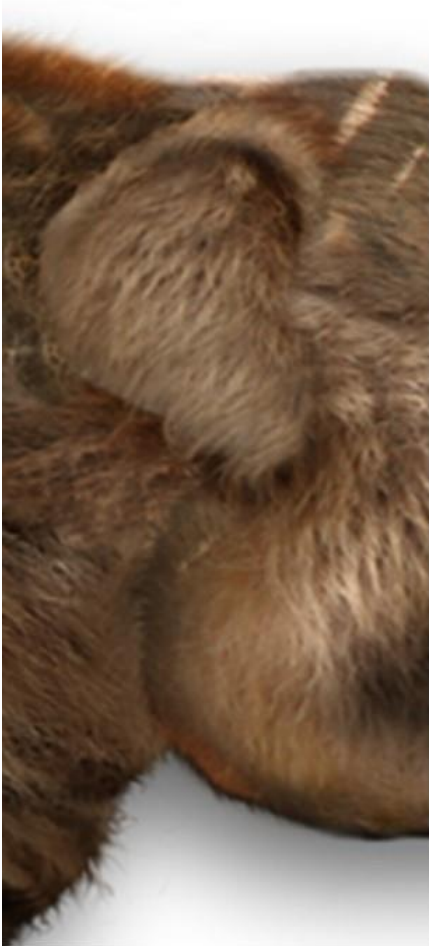
African Elephant



Mastodon







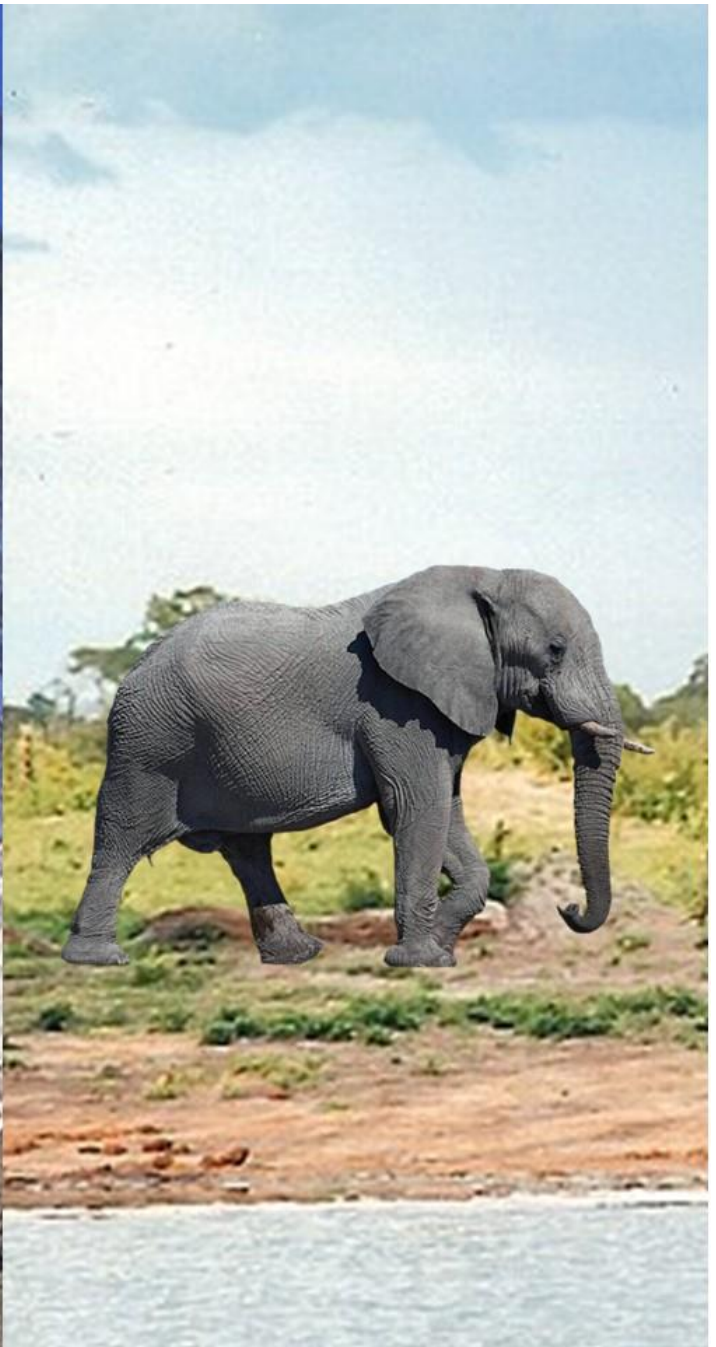
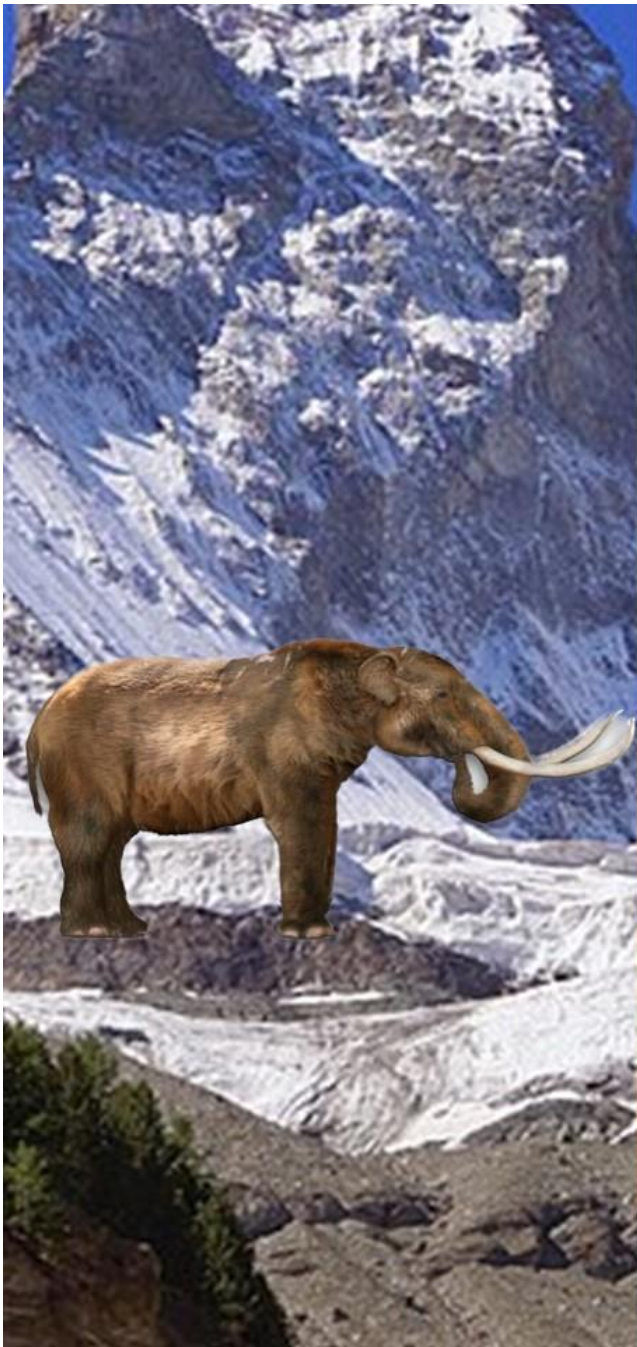








Image Index

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	<p>Ice coverage at 19,000BC (computer modelled)</p> <p>https://sos.noaa.gov/catalog/datasets/blue-marble-sea-level-ice-and-vegetation-changes-19000bc-10000ad/</p>
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